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The Theory of Saving[1]

By C. Bresciani-Turroni

I

THE FORMS OF THE SAVING PROCESS

Introductory
1. Mill's Conception of Saving.
2. Walras' Theory of Capitalisation.
3. Böhm-Bawerk's Theory of Saving.
4. The Saving Process in the Case of Unexpected Saving.
5. The Saving Process when Production is Adjusted to Expected Saving.
6. Relation of Investment to Expected Saving.

It has been often pointed out, more especially by Professor Cannan, that the classical economists had left the theory of saving in a quite unsatisfactory condition. Subsequent writers, instead of attacking the main problems, dwelt too much, as Professor Röpke rightly observes,[2] on comparatively unimportant topics, such as the question whether capital is the result of thrift or industry or of both. Substantial progress beyond the conclusions reached by the classical economists was made in the works of Jevons, Walras and Böhm-Bawerk. Afterwards, this side of economic research was for a long time neglected, if we except some penetrating analysis of the subjective factors of saving. But in this last decade the problem of saving has again attracted increasing attention, and important contributions have been made by a number of English and Continental economists, such as Robertson, Keynes, von Hayek, Akermann, Spiethoff, Rist and Fanno. It was realised that a correct theory of saving was necessary in order to explain the vicissitudes of the Trade Cycle, upon which economic research has centred since the end of the Great War. Thus the theory of saving has also benefited from the general progress of economic science, which was stimulated by the conspicuous social and economic disturbances of the post-war period. It was once more confirmed that epochs of economic unrest are favourable to our studies.

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[1] Two lectures delivered in the London School of Economics and Political Science on May 29th and 30th, 1935.

[2] *Die Theorie der Kapitalbildung*, Tübingen, 1929, p. 6.

Though the theory of saving has been considerably improved in these last few years, there is still no agreement on several important points, as some controversies in England have also shown. I shall try to expound in these two lectures the leading ideas which have emerged from the attempts of the economists to give a description of the saving process, and more especially I shall examine some older Continental doctrines to which little or no reference has been made in recent English discussions.

I

Mill's Conception of Saving

The classical theory of saving is permeated by the conception that savings are part of the annual flow of consumption goods. As Adam Smith observes in a well-known passage, "what is annually saved is as regularly consumed as what is annually spent, and nearly in the same time too." Saving results in the transfer of consumption goods from the classes possessing them, or having the ability to purchase them, to the working classes. This is the main idea underlying Mill's rather confused exposition of the effects of saving. Mill tries to show that when the savers restrict their consumption, that of the labourers will increase to the same amount: when the capitalists abstain from consuming wine or silk, more bread, beer, coarse clothing and fuel will be bought by the labourers.

According to Mill those who save spend part of their income in buying *productive services of labour*, instead of consumers' goods or consumers' services. A man saves when he hires "journeymen bricklayers to build a house or excavators to dig artificial lakes" instead of "buying velvet or lace" or of "maintaining a pack of hounds," or an "establishment of servants." Mill thus supposes that the decision not to spend on consumption goods is immediately followed by the decision to undertake investment through the purchase of productive services. In Mill's opinion every addition to capital through saving "gives to labour either additional employment, or additional remuneration, enriches either the country or the labouring class. If it finds additional hands to set to work, it increases the aggregate produce, if only the same hands it gives them a larger share of it, and perhaps even in this case by stimulating them to greater exertion, augments the produce itself."[1] This is a most curious passage. If taken literally, it would lead to the absurd conclusion that, when all workers are already employed, saving will simply bring about a change in the distribution of income without any direct influence on production. Savings would then be, to use a modern expression, "abortive." Mill considers only the immediate and temporary consequences of savings. His failure to grasp the ultimate effects depends on his not having a clear idea of the relation between the size of the "fund for the maintenance of workers" and the structure of capitalistic production.

2

Walras' Theory of Capitalisation

With Walras the theory of saving makes a stride forward. Walras' conception of the saving process is quite different from that of the classical writers and their followers. A man saves when he buys with part of his money income *new capital goods* instead of consumption goods. Of course, in practice, the savers will not buy material goods, but securities and more especially old securities, because the yield of newly issued securities is often uncertain. But this is only a detail. In this case, the money saved will flow to some entrepreneurs and will be used, according to

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[1] *Principles of Political Economy*, edited by Ashley, London, 1926, p. 68.

Walras' conception, for purchasing new investment[1] goods produced by other entrepreneurs.

The consumers get a money income through selling the services of their capitals, personal or material. According to Walras, those who save exchange in ultimate analysis part of these services, not against consumers' goods, but against new capital goods, and total savings are equal to the excess of the aggregate value of services supplied over the aggregate value of consumption goods demanded. Services are thus transformed by entrepreneurs partly into consumption goods, partly into new capital goods. This latter process is called by Walras "capitalisation."

Walras' theory of capitalisation can be briefly expounded as follows:

There are two streams of money having their source in the expenditure of the public; the one meets a certain flow of consumption goods, whereas the other meets a certain flow of new capital goods.[2] The second stream represents the supply of savings. Walras supposes that when consumers decide, for instance, to decrease expenditure on consumption goods, the amount spent on new capital goods increases by exactly the same amount and simultaneously with the diminution in expenditure on the other category of goods. In equilibrium conditions the total excess of income over expenditure—that is to say, the total supply of savings—must be equal to the total money value of new capital goods and at the same time to the total cost of production of these goods.[3]

The supply of savings therefore represents the demand for new capital goods. On the other hand the supply of new capital goods represents the entrepreneurs' demand for savings. The equilibrium rate of interest is the outcome of the impact of these two forces that meet on the capital market. At a given rate of interest there will be, other things remaining equal, a certain supply of savings and the new capital goods forthcoming will have a certain value. If this latter value is not equal to the amount of savings, then an equivalence will be brought about through a change in the rate of interest.[1] When the supply of savings is at the beginning greater than the value of new investment goods, then the value of the latter will rise, through a decline in the rate of interest, which at the same time will tend to diminish the amount of savings. But this equilibrium will be but temporary when the current value of new investment goods is different from their cost of production. If the current prices of these goods have risen above cost of production, their production will be stimulated. When on the contrary at a given rate of interest the amount of saving is less than the total cost of new investment goods, the production of the latter will be decreased. The normal equilibrium rate of interest is that rate which equalises savings and the total cost of new investment goods.

---

[1] It should be observed that the word "investment" is used by modern writers in quite different senses; which, of course, engenders confusion. Sometimes it means "expenditure on capital goods" (on "non-available output" according to Mr. Keynes' expression, or on securities representing it). Sometimes it means "the act of the entrepreneur, whose function it is to make the decisions which determine the amount of the non-available output, and consists in the positive act of starting or maintaining some process of production or of withholding liquid goods" (Keynes, *Treatise on Money*, I, p. 172).

[2] These, of course, are not exactly Walras' words, but I have tried to give a plastic form, for didactic purposes, to what I think to be Walras' thought, without entering into the question, whether Walras' system of general economic equilibrium is constructed upon "barter assumptions." (See on this question A. W. Marget, "The monetary aspects of the Walrasian system," *Journal of Political Economy*, April, 1935.)

[3] This theory is set forth in Section V. (Théorie de la capitalisation et du crédit) of Walras' *Eléments d'économie pure* and summarised in an appendix which bears the characteristic title "De l'échange d'épargnes contre capitaux neufs."

It should be added that some practical conclusions may be drawn from Walras' equation expressing this equivalence. If, for instance, the rate of interest is artificially fixed at a level below the "natural" rate, the immediate consequence will be a rise in the value of new investment above the total amount of forthcoming savings. Additional money must be then issued in order that the new investment goods may be bought. Therefore a policy of deflation is quite inconsistent with a policy of low interest rates.

Walras explains in a passage of his work the significance of the expression: excess of income over consumption. He observes that this excess may be just sufficient to cover depreciation and insurance quotas of durable capitals, that is to say, to maintain the existing capital intact; or it may be less than the amount of these quotas, in which case capital is consumed; or it may be greater than the amount required for replacing durable capitals. It is in this third case that saving in the proper sense of the word takes place. It is only this third case that Walras considers in his theory of capitalisation, and in his fundamental equation expressing the equivalence between saving and investment the word "épargne" means fresh savings, and investment includes only new durable capital goods.

---

[1] If $D_1, D_2, D_3 \ldots$ are the quantities of newly produced capital goods and $P_1, P_2, P_3 \ldots$ the prices of their productive services per unit, then the total money yield of the new capitals is $D_1P_1 + D_2P_2 + D_3P_3 + \ldots$ and their aggregate value is $\frac{D_1P_1 + D_2P_2 + D_3P_3 + \ldots}{i}$ (where i is the rate of interest).

Pareto, though developing the theory of capitalisation along the same lines as Walras, gave to it a more general form. Pareto himself did not explicitly stress the difference between Walras' theory and his own; but this difference is easily detected if Pareto's equations given on page 60 of the *Cours* (volume I) are compared with the corresponding Walrasian equations. According to Pareto, savings include also depreciation and insurance allowances, and in equilibrium conditions savings thus defined must be equal to the total cost of production of the additional capital goods ("capitaux neufs") and of those which merely replace worn out instruments ("capitaux anciens"). For Pareto also capital goods mean only durable goods; raw materials do not appear either in his or in Walras' equations. It results from Pareto's equations that the existence of a rate of interest does not presuppose a progressive society, as is implicit in Walras' equations; because the production both of the "capitaux neufs" and of the "capitaux anciens" is subject exactly to the same conditions, namely, in equilibrium conditions the price of each capital good must be equal to its cost, and the rate of net yield must be the same for every capital good.[1]

In recent years the problem of the relation between saving and investment has been much discussed in England and elsewhere. Now Mr. Keynes' well-known equations show that in equilibrium conditions "both the value and the cost of current investment must be equal to the amount of current savings, and profits must be zero."[2] The analogy between this proposition and Walras' theory is evident. But Walras' system of equations is more embracing than Keynes', because it vividly expresses the interdependence between the amount of current savings, the prices of consumers' goods and of productive services, the rate of interest, the value and the cost of new investment. However, neither Keynes nor Cassel nor Spiethoff have ever referred to Walras as the first economist who assigned to the principle of the equivalence between saving and investment its proper place in the general theory of economic equilibrium.

---

[1] That is to say, if P_1, P_2, P_3 . . . are the net prices of the services per unit of capital goods, and C_1, C_2, C_3 . . . the costs of production per unit, in equilibrium conditions we have $\frac{P_1}{C_1} = \frac{P_2}{C_2} = \dots$

[2] *A Treatise on Money*, Vol. I, p. 152.

Though Keynes and Walras agree as to the definition of the conditions determining equilibrium, they express quite opposite views as to the relation of saving to the value (as distinguished from the cost) of new investment during transition periods. This is the crucial point in Keynes' system. For if we admit with Keynes the possibility of a divergency between saving and the value of new investment, it follows that the price of output as a whole, other things remaining equal, will increase or decline, and total profits or total losses will arise, according as the value of new investment exceeds or falls short of saving. For Walras, on the contrary, the value of new investment goods must always be equal to saving,[1] though their aggregate cost of production may diverge from the amount of savings. It follows that neither changes in the average price of output as a whole nor total profits or losses will be brought about by maladjustments between savings and investment.

According to Keynes, when the price level of consumption goods declines owing to an excess of savings over investment, there need be no counterbalancing rise in the price level of investment goods, even if there is no increase in hoarding, so that the general average of prices will fall. Walras' equations show, on the contrary, that the average price of consumption goods and that of new investment goods will move in the opposite direction, provided the volume of money is kept constant, when expenditure on consumption goods varies. It will be recalled that Professor Robertson has expressed exactly the same opinion in his criticism of Keynes' celebrated banana parable.[2] Walras stresses the opposition between the demand for consumers' goods and the demand for producers' goods. It results very clearly from Walras' equations that these two demands are at a point of time not complementary but competitive (to use Professor Robbins' words). That is to say, a disproportionate rise in the demand for consumers' goods will not result in a corresponding increase in the total demand for the products of the constructional industries, as might seem at first sight; but, on the contrary, it will cause this latter demand and therefore investment to diminish. Indeed, an increase in the sum spent on consumers' goods means a diminution in the supply of savings; now, it is on this latter that the demand for investment goods depends. It is true that the increase in the demand for consumers' goods will be an incentive for the entrepreneurs producing these goods to buy some sorts of capital goods ; but the demand for the latter cannot become effective, if the means to procure them do not exist, and these means are not supplied by the consumers—who merely pay a price for the *use* of capital goods—but by the savers, in the absence of a credit inflation.

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[1] *Elements*, p. 271.

[2] See " Mr. Keynes' Theory of Money," *Economic Journal*, 1931, p. 399.

3

Böhm-Bawerk's Theory of Saving

Walras' theory remains, in spite of the consideration of saving, a static theory. He supposes that, during a given period of time, all data of the problem remaining unchanged, the services of labour, capital and land are exchanged against consumption goods and new capital goods. The new capital goods will appear only in the next period of time among the data of the problem. In order to obviate the difficulty arising out of the fact that the adjustment of the production of new capital goods to the amount of savings requires time, Walras supposes this production to be instantaneous.[1] In this way dynamic problems are ruled out ; but this neglect of time is a serious gap in Walras' theory, as has been pointed out by Wicksell and others. Though Walras professes to analyse the production of new capital goods, in fact he does not explain how capital is formed, he does not describe the process of saving and the changes in the structure of production involved by people saving more or less of their incomes. This, of course, by no means impairs the great importance of Walras' theory, which I think would have done good service if it had been recalled during the recent discussions on the relation of saving to investment.

In order to understand the saving process it is necessary to take into consideration the influence of time. As is well-known it was Böhm-Bawerk who, constructing an imposing edifice upon the basis laid by Jevons and Menger, gave us a theory of the capitalistic process which is considered by many Continental economists as the best now existing. Böhm-Bawerk draws attention to the fact, which however is implicit also in Walras' theory, that the goods from whose consumption savers abstain need not exist physically, as was assumed by the classical writers. Böhm-Bawerk's primitive fisherman saves through turning aside for a while from the catching of fishes and devoting instead part of his time to the construction of a boat. Saving therefore essentially consists in setting free a certain amount of original factors of production, namely, the services of labour and of land, through which new capital goods are produced. Therefore, what is saved is not consumption goods, but productive resources: "Produktivkräfte". Recalling the well-known distinction between saving "on" and saving "up", made by Professor Cannan, we could say that the saving process, according to Böhm-Bawerk, begins with saving "on" productive factors and ends with saving "up" capital goods.

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[1] *Éléments d'économie pure*, p. 260. On Walras' theory see the recent paper of J. R. Hicks, "Leon Walras" (*Econometrica*, 1934, p. 338).

Such examples as Böhm-Bawerk's primitive fisherman may be useful in that they clearly show the action of some fundamental economic forces. But they may also be dangerous when they induce the economist to apply to the complicated structure of modern society the conclusions reached under the assumption of very simple conditions. I think that Böhm-Bawerk also drew too close a parallel between the world of his primitive fisherman and that of an exchange economy. For the fisherman the decision to save is simultaneous with the decision to shift productive factors from the production of consumers' goods to that of new capital goods. Böhm-Bawerk contends that the process of saving is essentially the same in the modern exchange economy.[1] To this it might be objected that, as we shall presently see, the starting of the new productive processes rendered possible by saving will precede saving, and not follow upon it, when, as might be expected, the entrepreneurs will reckon in advance with the changes in the demand for commodities brought about by saving.[2]

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[1] According to Böhm-Bawerk, the liberation of productive resources consequent upon saving takes place in three different ways. Either some producers restrict the output of consumers' goods which require only a short period of production; or the volume of replacements is reduced; or some goods, which can be used both as consumers' or as producers' goods, such as coal or wheat or wood, are transferred from the former to the latter category (*Kapital and Kapitalzins*, II Abt, I Halbband, p. 194).

[2] Böhm-Bawerk makes a short allusion (II Abt, I Halbband, p. 195) to some arrangements being possibly made in view of future saving; but this does not affect his fundamental conception according to which the shift in the application of productive resources, rendered possible by saving, *follows* upon saving. This is also the opinion of Professor Eucken (*Kapitaltheoretische Untersuchungen*, 1934, p. 141). According to this economist the saving process is characterised by two essential events, a reduction of consumption and a shift in the application of the factors of production. Normally, that is to say, in the case of voluntary

Unlike Walras, Böhm-Bawerk gives an elaborate description of the changes in the economic structure connected with saving, but he does not state the conditions on which equilibrium in a progressive society depends, as Walras had done. From this latter point of view Böhm-Bawerk's theory appears to be inferior to that of Walras. Though Böhm-Bawerk quotes Walras here and there, he evidently did not go through his theory of saving, having been probably deterred by the mathematical apparatus used by the French economist.

If we now turn to more modern Continental writers we still find a lack of agreement as to certain fundamental conceptions concerning saving. There are numerous economists who still adhere to the classical conception, according to which savings are used in advances to production, and the counterpart of money savings is represented on the goods' side by an additional fund of consumption goods, which are reserved for the remuneration of "productive" workers. The disposal of this additional fund is transferred to the borrower, when the savers lend their money.[1]

On the other hand, Cassel contends that the savers do not make available concrete consumption goods; saving consists in a particular method of applying factors of production.[2] Savings are purchasing power directed to the buying of investment goods instead of consumption goods. Thus Cassel accepts what I should like to call the Walrasian conception of saving (though, as I have already observed, he makes no reference to Walras). But the hasty reader will perhaps find a contradiction between the passage quoted above and another passage[3] of the *Theory of Social Economy* where Cassel affirms that savings are for the

saving, the first event precedes the second. In some circumstances the two events may take place simultaneously: in the case when saving is imposed on the community by a central authority in a system of a planned economy, or in a case of "forced saving" brought about in an exchange economy by money inflation. It does not occur to Professor Eucken to consider the possibility of investment *preceding* saving.

[1] Pareto gave in 1896 (*Cours*, I, p. 301) the following definition of saving, which perhaps is not fully in accordance with his theory of capitalisation: "L'épargne est constituée par les biens économiques que les individus se sont abstenus de consommer." The same view is held by another prominent Italian economist, Pantaleoni. According to him, when someone saves part of his income, he saves some concrete things, which are different according to the activity of the different individuals. Savings will in their original form be embodied in the commodities saved, such as vegetables, or cattle or textile goods; afterwards they will take other forms (*Atti del I Congresso internazionale del Risparmio* held in Milan in 1924, p. 778).

[2] *Theory of Social Economy*, 1932, Vol. I, p. 36.

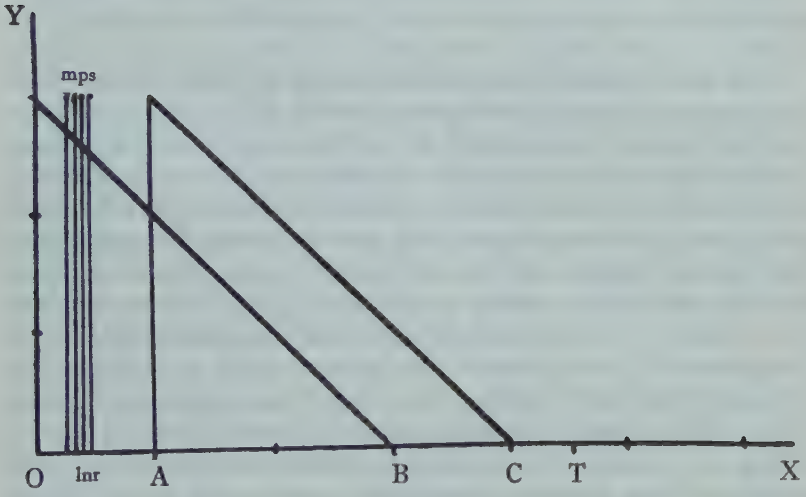
[3] *Ibid.*, Vol. I, p. 204.

most part, though not completely, used for paying wages, and are then spent by the workers for buying the necessities of life.

4

The Saving Process in the Case of Unexpected Saving

The truth is that, though the outcome of saving is normally in any case the same—namely, the stream of savings transforms itself into a stream of new intermediate goods which later results in an increase of consumable income—the ways leading to this result are different. The saving process takes in practice manifold forms. It is before all necessary to distinguish between a transition period, following upon *unexpected* savings, and the conditions proper to a state of equilibrium when production has adjusted itself to the forthcoming savings. I shall try to analyse the saving process with the help of a graphic presentation :—



Let both the axis OX and the axis OY be divided into equal segments indicating equal periods of time. Let us suppose that there is available, at the point of time 1, a given amount of labour, land, goods in process and fixed capital.

A stock of consumption goods need not exist under the assumption made here of a continuous production. Let the line lm represent the time elapsing on the average between the first and the last application of resources[1] in the manifold production processes, which are started at the point of time l. In the same way, np, rs, etc., measure the average length of the production processes started at the points of time n, r . . . respectively. For simplicity's sake, all these lines are supposed to be of equal length.

The graph shows that the consumption goods, whose production has been started during the period OA, will emerge from the production process during the period BC. In a stationary economy, out of this flow of consumption goods will be paid the real wages for the several groups of workers, whose labour replaces during the period BC the raw materials and half-finished products, which are being destroyed during the production process. Moreover, part of the flow of consumption goods will be distributed among those workers, whose task is to replace the fixed capital and other auxiliary materials (such as fertiliser, dyes, and so on) necessary for the production of consumption goods.

Now what will happen if some people begin to save part of their money income *during the period BC*? The counterpart of money savings will be on the goods side a certain amount of really existing consumption goods. Indeed, when people decide to save, without producers having been able to reckon in advance with this decision, the consumption goods, which the savers would have otherwise purchased, *have been already produced.* This is more evident if, instead of supposing output and consumption to be simultaneous, we assume the existence of a certain lag between the two events. In any case there will exist, when people begin to save, many intermediate products, which are nearly finished and which entrepreneurs will therefore very probably complete in order to avoid severe losses. It is no exaggeration to say with Professor Taussig that the total real income of a community is for some time predetermined, because it depends mainly on forces which have been operative in the past. This is clearly shown by our graph.

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[1] For instance, the time elapsing between the moment when cotton cultivation begins (supposing implements, fertiliser, seed and so on to be already available) and the moment when shirts are bought by the consumers. The line lm of the graph, therefore, does not indicate the "average period of production" in the sense of Böhm-Bawerk's theory.

Unexpected saving need not be accompanied by a corresponding diminution in the prices of consumers' goods when the new savings are transformed into wages. This will evidently happen when the savers themselves or the entrepreneurs, to whom the savers have transferred new purchasing power directly or through the purchase of securities, undertake investment and hire workers. Without doubt a large amount of new investment is financed through fresh savings. For instance, the Suez Canal enterprise was financed with the money given by the stockholders, and this money was mainly used for supplying with food and water thousands of labourers working in the desert. The classical conception according to which savings are used for paying the services of labour is so far correct. It is true that in those equilibrium conditions, to which Walras refers, savings are exchanged against new capital goods; but when savings begin to be formed, without production having beforehand reckoned with them, these goods do not yet exist and must be produced.

The issue is however different according as all workers are already employed or not when saving begins. In the first case, money wages will rise, as Mill rightly observes—they must rise, if workers have to be bid away from previous occupations and engaged in the production of new investment goods—and this gives to the workers the possibility of purchasing the consumers' goods, from whose consumption the savers abstain (a complication arises when the goods demanded are not the same). In this case it is the rise in wages which induces the entrepreneurs of the consumption industries to restrict their production.

In this first stage society taken as a whole does not save, though some individuals restrict their consumption. But let us now see what happens in a second stage. There will then occur a diminution in the output of consumption goods. It is in this second stage that society really saves. If the flow of money savings continues unimpaired, and savings are still used for purchasing the services of labour, money wages will remain at the level attained in the first stage, but real wages will again decline owing to the rise in the prices of consumption goods. In no way, however, will voluntary saving occasion a diminution of real wages. When, on the contrary, the production of new investment goods is financed, not with savings, but with inflationary credit, real wages, after an initial increase, will diminish.[1]

In the second stage of that form of the saving process with which we are dealing here, that abnormal abundance of the fund for the maintenance of labour, which had been the immediate consequence of saving, will disappear; in other words, in the second stage, where production has adjusted itself to savings, the latter do not result in additional goods being supplied to labourers, provided the amounts of money saved in equal periods of time remain constant. It is true that in the second stage the savers continue to transfer to the working classes the power to purchase a certain quantity of consumers' goods, instead of consuming them themselves; but the aggregate output of enjoyable goods will have diminished by an amount corresponding to the volume of savings, the place of the latter goods having been taken by new capital goods.

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[1] Let us suppose that there are available, at the beginning of a given period of production, G units of consumption goods (the result of the production of the preceding period) which will be consumed during the same period. Let the total money income (M) consist of the part (C) received by the "capitalists" and of the sum disbursed to wage-earners $(M-C)$. Both classes are supposed to get their incomes at the beginning of the period. Then, supposing each unit of money to change hands once during the period in exchange for consumers' goods, the average real wage of a worker, if N is the total number of workers, is $\frac{(M-C)\,G}{M \cdot N}$ units of goods.

Suppose now that at the beginning of the period the capitalists save an amount S of money, which they spend for purchasing the services of labour. The average money wage then rises to $\frac{M-C+S}{N} = W$, whilst the prices of consumption goods are on the average unaffected. The savings S will be used for paying the wages of $\frac{S}{W}$ workers, who are diverted from the production of consumption goods to the construction, say, of a road.

At the beginning of a subsequent period the output of consumption goods will have diminished, under simplifying assumptions, by $\frac{S}{W} \cdot \frac{G}{N}$ units. On the other hand, the entrepreneurs will have again accumulated M units of money, which they are supposed to distribute as before between the wage earners and the capitalists. If the latter continue to save S units of money, money wages will remain at W; but real wages will diminish, as a consequence of the rise in the price of consumption goods from $\frac{M}{G}$ to $\frac{M}{G - \frac{S}{W} \cdot \frac{G}{N}}$. The average real wage will drop again to $\frac{(M-C)\,G}{M \cdot N}$, which is exactly the level at which it stood before the beginning of saving. The capitalists, who in the first stage of the saving process bought $\frac{(C-S)\,G}{M}$ units of consumption goods with that portion of their income which they did not save, now can buy but less, owing to the rise in the prices of these goods; that is to say, they must reduce their consumption by a greater amount than they had the intention to do voluntarily.

Let us now suppose that the additional demand for labour has its origin, not in saving, but in inflationary bank credit. Let the sum spent in wages at the beginning of the period be $M-C+V$, where V indicates the amount of additional credit. The average level of prices will be $\frac{M+V}{G}$, and the real average wage will be $\frac{(M-C+V)G}{M+V}$, which is greater than $\frac{(M-C)G}{M \cdot N}$. Thus, at the beginning, credit inflation will also result, under the assumptions here made, in a rise in real wages, at the expense of those who have fixed incomes. But later, if credit to the amount of V continues to remain in circulation, and the output of consumption goods diminishes according to the assumptions previously made, the prices of the latter goods will rise further and real wages will fall to $\frac{(M-C)\,G}{N\,(M+V)}$, that is to say, they will drop *below* the level at which they stood before the beginning of credit inflation. In this second stage credit inflation is accompanied by "forced savings" both of capitalists and working classes.

When savings are spent on the purchase of capital goods, without production having reckoned in advance with the rise in the demand for these goods, the prices of consumption goods will fall and those of capital goods will rise. Real wages will rise in a first stage (as a consequence, not of higher money wages, but of lower prices of consumption goods) provided the profits of the industries producing capital goods are re-invested in production. In a second stage the prices of consumers' goods will again rise to the previous level, and real wages will again fall.

It should be observed that, though the prices of consumption goods rise in the second stage, the entrepreneurs will not be induced to extend again the production of these goods, thus disturbing the process of saving, because the rise in prices is offset by a corresponding increase in money wages, and no exceptional profits will result. A new stage begins when the new capital goods produced thanks to saving are completed. If savings then cease, or diminish substantially, surely more or less serious disturbances will occur, until a readjustment of productive resources is brought about and the workers previously employed in the production of the new investment goods (for instance, a railway, a harbour, a tunnel) are re-absorbed by the industries producing consumption goods. In any case, when savings are irregular and not accounted for in advance, some friction and loss is likely to occur, even if savings give rise immediately to a corresponding volume of investment.

We have so far supposed that all workers were employed when savings began. When, on the contrary, fresh savings are spent on remunerating the labour of hitherto unemployed people, then, of course, the flow of consumers' goods will not diminish and these savings will represent, as long as they are made, an additional source of wages. The classical writers had mainly stressed this case. It should be added that the disturbances, which the saving process calls forth, are then probably mitigated, because the changes in the prices of consumption goods, and in money and real wages, previously alluded to, need not occur.

A realistic conception of saving ought not to start from the assumption of a constant population, because in fact every year new groups of workers enter the labour market in excess of those who withdraw from it. This additional supply of labour would tend, if other things remained equal, to depress wages, and therefore to shorten the average period of production, or, in other words, to render the economic structure of the country less capitalistic. But the new labourers meet with a stream of new savings. The rate of saving is normally much greater than the rate of increase of the population, so that the period of production is, on the whole, lengthened. The new savings are in part embodied in consumers' goods for the maintenance of the additional workers; in part they create a new demand for capital goods.

5

The Saving Process when Production is Adjusted to Expected Saving

But the saving process assumes very often another form besides that just described. Observation shows that, even when the production of new investment goods is financed out of forthcoming savings, only part of the latter is spent for paying wages, whilst the rest is used for purchasing raw materials, tools, machines and so on. Let us suppose that the increase in the demand for capital goods, occurring during the period BC as the consequence of saving, has already been forecast during the period OA. What will then happen? Under the assumption of a constant supply of resources, the saving process will go through three stages in this case also. The third stage is the same as in the form of saving previously analysed, but the sequence of events leading to it is different. During the first stage, that is to say during the period OA, a *shift in production begins to take place*. The expectation of a decrease in the demand for consumers' goods will set free, during the period OA, a certain amount of factors of production, namely, labour, and the services of nature and of some kinds of fixed capital. At the same time, as a consequence of the contraction of the production of consumption goods, a certain amount of money capital is rendered available and turned to investment in other lines, which appear to be more profitable, owing to the expected increase in the demand for some categories of capital goods. To this there corresponds on the goods' side *a shift in the stream of* *consumption goods, forthcoming during the period OA* and used for the maintenance of labour. Part of these goods will transform themselves into real wages for the workers engaged in the new productive processes on which entrepreneurs have embarked in the expectation of saving.

In conclusion, as the consequence of expected savings, during the period OA (and in subsequent periods) resources are diverted from the lines of industry, which would have led to the output of consumption goods during the period BC, to other and longer processes, from which new investment goods will emerge *during the period BC*, and consumers' goods *at a later period*. The mere expectation of saving thus results in a lengthening of the period of production, without this being subordinate to a previous increase of the " subsistence fund ". Whereas, in the case of unexpected saving, investment (in the sense of the starting of new production processes) follows upon saving, in the case of expected saving investment (when conducted on rational lines) is adjusted to future saving.

The second stage of the saving process, when this latter takes the form examined in this section, is that in which the expected saving takes place. It is the period BC in our graph. In this period there occurs a change in the composition of the total output of goods. The place of consumption goods, which would have been otherwise produced, is taken by new investment goods. But this shift will do no harm if the reduction in the output of consumers' goods, during the period BC, is exactly balanced by a corresponding decrease in the expenditure of consumers, and the total value of savings happens to be equal to the total cost of the new investment goods, against which they are exchanged. Do savings represent in this case an additional demand for labour? Evidently not. Mill affirms in one of his celebrated propositions that demand for commodities is not demand for labour, whereas savings are demand for labour. But Mill himself writes: " A demand delayed until the work is completed, and furnishing no advances but only reimbursing advances made by others, contributes nothing for the demand of labour; it does not and cannot create any employment except at the expense of other employment which existed before."[1] Well, when savings are reckoned with in advance, and the production of new investment goods is adjusted to them, they merely reimburse advances made by others and therefore do not create a new demand for labour. When savings are made during the period BC, this has simply the effect that investment of resources will take during the period OA a direction different from that which the entrepreneurs would have chosen in the absence of saving.

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[1] *Principles of Political Economy*, etc., p. 86.

These considerations show that the increase in the stock of new capital goods is not necessarily subject, as some economists contend, to the condition that the quantity of "free" capital, in the form of consumers' goods available for roundabout production, has been previously increased. The amount of available funds remains during the period OA what it is, but is allocated in a different way, when the entrepreneurs reckon with future savings, than when such an anticipation does not take place. Let us imagine an extreme example and suppose that during a given period OA the flow of consumption goods is 100; of which 40 represents "wages goods", and 60 is consumed by the capitalists. Now, it is foreseen that the latter will save the whole of their income during a future period BC and buy instead new capital goods. The entrepreneurs will then rearrange production in such a way as to reduce the output of consumers' goods, emerging during the period BC, to 40; instead, 60 of new investment goods will be produced and exchanged against the new savings.

Clearly, under the foregoing assumptions, the act of saving does not create during the period BC a corresponding amount of "free" capital in the form of consumers' goods. When, however, actual savings happen to be short of the expected amount, this will result in a contraction of the stream of consumption goods available for the working-classes and therefore in a "forced" saving being imposed upon the latter. On the other hand, if savings are in excess of the total cost of new investments, more consumption goods will be available for the working-classes, and the saving process will then tend to take the form I have examined in Section 5. In practice, the two forms of the saving process—saving preceded by a shift in the distribution of factors of production and saving followed by such a shift—will occur together in close association.

It is perhaps also worth noticing that, when investment (in the sense of the starting of new processes of production) precedes saving, there is no necessary equivalence between the volume of savings occurring during a given period and the amount of resources which are diverted to the production of new investment goods *during that same period*. According to an arithmetic example given by Böhm-Bawerk, if in a given year the savers abstain from consuming goods whose production requires one million "labour-years," then the quantity of labour which is set free and will be shifted to the production of new investment goods, is exactly one million labour-years. To this it might be objected that the distribution of resources between the production of consumers' goods and that of new investment goods will depend on the amount, not of present but of expected savings. Therefore in a progressive society the amount of money expended on the production of new investment goods in a given year will be always greater, if investment precedes saving, than the volume of new savings made in that same year.

During the period OA (and for a certain time afterwards) the production of new investment goods will run side by side with that of consumption goods ; but when the new railway or bridge or harbour is finished, it is inserted into the productive process which leads to the output of consumption goods. A redistribution of productive factors then takes place again and the result will be that in the third stage of the saving process, say, during the period CT (see graph), the flow of consumption goods is greater than before saving had set in. In the first and second stage no shift in the prices of consumers' goods need take place in equilibrium conditions. But in the third stage the prices of these goods will fall, other things remaining equal, as a natural consequence of their greater abundance. While the public, led astray by some popular misconceptions, is impressed especially by the alleged disturbances arising out of saving in this third stage, economists have recently concentrated their attention on divergencies between savings and investment which might occur in the *second stage*.

6

Relation of Investment to Expected Saving

But is not this whole construction a quite unrealistic one ? How is it possible in the actual world that future savings might be forecast ? To this we might answer that, surely, production cannot reckon in advance with a sudden increase or decrease of future savings. But we may safely admit that in a society where savings are regularly made year after year—disregarding possible causes of disequilibrium which will be considered later—there is a tendency for the production of capital goods to adjust itself to the expected demand for them arising out of savings. This conclusion is also supported by the authority of Professor Taussig, according to whom that process of investment by which every year new capital goods are added to the existing stock of wealth is "prepared for and virtually accomplished before the individuals commit themselves to the decisive step of turning their money income to investment rather than to enjoyment". "Additional supplies of real capital are constantly being made in our modern communities in anticipation of the fresh accumulation of individual capital."[1] For instance, the structure of English industry has been based in the last few decades upon the expectation of large savings of the English people being invested in foreign countries and creating there a demand for products of the English export industries.[2]

Very often changes in the direction of investment, brought about by the expectation of future savings, will be operated through credit. Replacement funds and depreciation allowances, which some entrepreneurs are unwilling to reinvest, will be deposited with banks and transferred by these latter to other entrepreneurs who will start some new processes of production, leading to the output of new investment goods instead of goods for consumption.

When it is anticipated that, for instance, a railway will be constructed during the period BC, the preparatory work will already begin, say, during the period OA. Coal producers get credit in order to pay their workers, and the credits are repaid when the coal enterprises sell the coal to the firms which produce raw steel. The latter will also buy coal, iron ore, and services of labour with credits, which in turn will be repaid when the steel is sold. The volume of short term credit thus swells as production proceeds from the higher to the lower stages. When during the period BC funds begin to be raised by the promoters who plan to construct a railway, there are already locomotives, cars, rails, sleepers, building materials awaiting a purchaser. They embody a certain volume of bank credit which will be released, and will become again available for production either on the same or on other lines, as soon as the new investment goods are exchanged against savings. The fact should be stressed that the creation of bank credit during the period OA does not mean the creation of a demand for durable investment goods. Whether a demand for the latter will arise at a later period BC will depend on whether sufficient savings will be available to take over the durable capital newly produced.

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[1] *Wages and Capital*, reprinted by the London School of Economics, pp. 59 and 95.

[2] L. Robbins, *The Great Depression*, 1934, p. 178.

These considerations might afford a criterion for distinguishing between the money market and the capital market (a criterion which however cannot claim a general validity, because the saving process does not always take the form I have described in the present section). The former is the market where short credit is supplied in order to enable entrepreneurs to carry on production, both of consumption goods and of new investment goods, or to start new production processes. On the second market entrepreneurs demand capital in order to buy durable goods ; long term credit, supplied by saving, then takes the place of bank credit. The nature of this process had been clearly perceived by Jevons when he wrote : " What capital I give for a spade merely replaces what the manufacturer had already invested in the expectation that the spade would be needed."[1] Short time funds and long time funds cannot properly be considered—as could be inferred from some rather vague expressions used by several economists—as the two parts of which the total volume of savings consists, because they are only two aspects of one and the same process. The essential fact is that, in order that new investment goods be produced, it is necessary to dispose of a certain flow of consumers' goods, which will maintain labour during the process of production. Either these goods are supplied by the savers themselves, and in this case no short time credit is needed ; or the new investment goods are produced in anticipation of future saving, through diverting part of the existing stream of consumption goods to other directions ; and in this case the subsequent saving does not result in the creation of additional free capital in the form of consumption goods, but merely renders it possible to the entrepreneurs to pay off their bank debts. In this connection I should like to add that a passage in the well-known book of Mr. D. H. Robertson on "Banking Policy" may give rise to some misinterpretation. Explaining the relation between "Short Lacking" and "Long Lacking" Robertson writes that the "pace is set by investors with their increased offers of Long Lacking; and if the banking system fails to conform, it will fail to maintain a due balance between the different kinds of Lacking required."[1] However, if saving increases during the period BC it is not necessary that the stream of consumption goods, which are invested during the period OA in production, and the volume of bank credit, be increased; all that is required is that a correspondingly larger part of the stream of credits be diverted during the period OA from the production of current output to that of new investment goods. To a larger volume of savings in the future there need only correspond in the present an appropriate redistribution of resources between the two great branches of production.

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[1] *The Theory of Political Economy*, second edition, p. 247. On the distinction between the money and the capital market, see : Spiethoff, " Der Begriff des Kapital- und Geldmarktes," *Schmollers Jahrbuch*, 1920, IV, p. 44, and Halm, "Das Zinsproblem am Geld- und Kapitalmarkt," *Jahrbücher für Nationalökonomie*, 1926.

The preceding considerations show that equilibrium in the saving process requires that production be coordinated in advance to future saving. The disregard of this principle may be in practice the cause of serious disturbance. For instance, a Government decides to impose a tax in order to finance out of its proceeds the execution of some public work. If all workers are already employed, the right policy, in order to avoid unnecessary shifts in wages and in prices, would be to impose the tax not before the work is begun, but after it has been completed. In the first stage the execution of the public work ought to be financed out of short term credits (but not inflationary credits), which will divert part of the available resources from the production of consumers' goods to the new undertaking. In the second stage the tax—supposing that it will be paid out of income, which would have been otherwise consumed—will tend to reduce expenditure on consumption goods to the same extent as the output of available goods is contracted. Something like this method is now being applied on a large scale in Germany. The funds necessary for the execution of the vast relief programme of the German Government, which amount to several milliards of marks, are being raised in the money market, where the Government sells Treasury bills, or are supplied by the Reichsbank, which discounts the so-called " labour bills " ; but it is hoped that in the future fresh savings, which can be made available in different forms, will release the bank credits.[1]

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[1] *Banking Policy and the Price Level*, London, 1926, p. 92.

It is related that in Russia a method of extracting forced savings from the population consists in raising by authority the prices of products above their cost of production.[2] The profits thus earned by the State industrial concerns, which produce those commodities, are used for financing the construction of new industrial plant. I do not know how this method works in practice ; but it is clear that, in order to avoid friction, investment (in the sense of the starting of new processes of production) ought to precede the decision to raise prices, because in this way the diminution in consumption, consequent upon the rise in prices, would be made to coincide with the reduction in the output of consumers' goods.

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[1] In the meantime, the process of reabsorbing bank credit through long term loans has already begun, and is making rapid progress.

[2] T. H. Fraser, " The price mechanism under Capitalism and under Communism " (*Al Qanoun Wal Igtisad*, Cairo, 1935, p. 319).

(*The second part of this article will be printed in May.*)

The Theory of International Trade in the absence of an International Standard

By P. B. Whale

The purpose of the following notes is to discuss the maintenance of international equilibrium when the currencies of the countries concerned are independent and exchange rates are free to vary.

I shall find it convenient to make comparisons on certain points with the working of an international gold standard system. So far the discussion will be relevant to the question of the relative merits of the gold standard and a system of free currencies. But I wish it to be understood at the outset that it is not my present purpose to deal with this question as a whole.

I

We may begin by affirming that variations in exchange rates can play the same part in maintaining international equilibrium as is played by shifts in the national price-and-income structures under gold standard conditions.

I think that there is pretty general agreement that in the latter circumstances the regulation of international balances of payments depends ultimately on the correction of surpluses or deficits by changes in the general level of incomes earned in production (factor prices) in the several countries concerned. If, for example, a country tends to have a surplus in its balance of payments, the remedy should come through a rise in this level which would have the two-fold effect (*a*) of increasing in general the money costs and therefore the prices of its products, and (*b*) of increasing the country's purchasing power in relation to foreign products. At the same time, of course, the reverse development should occur in other countries. There is some difference of opinion as to how the relative prices of a country's imports and exports will be affected by the process: in opposition to Taussig, Ohlin argues that because of the change in foreign demands, the commodity terms of trade will not necessarily follow the change in the relation between the national levels of incomes and domestic prices. But this point need not concern us here.

Now so far as the effects of these general shifts in the price and income structures are concerned, it is only foreign goods which will become cheaper or dearer in relation to incomes in each country, and it is only in relation to foreign goods that incomes will become greater or less; for home product prices and domestic incomes will in general move together. Hence the justification for the assertion that the adjustment could be effected equally well by variations in exchange rates, which would similarly affect the relation between home incomes and foreign prices.

It must be noticed, however, that the movement in exchange rates can only be a substitute for the *general* shifts in incomes and domestic prices of the gold standard régime. Relative changes of prices within the home price structure may be necessary under the gold standard both for reasons not immediately connected with the balance of payments and in consequence of the redistribution of demands in the process of international adjustment. To secure these changes in internal price relationships, absolute changes in prices in terms of the national currency will still be necessary when foreign exchange rates are variable. But it remains true that the system of independent currencies has the advantage of reducing the scope of the internal price changes which are necessary, to set against the disadvantage of uncertainty with regard to exchange rates. In particular it avoids the difficulties which arise when drastic general price changes have to be made whilst many incomes and charges are fixed under long term contracts.[1]

At this point it may be of interest to consider how far variable exchange rates provide a country with the means of isolating itself from the effects of a world trade depression.

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[1] When Professor Robbins complains (*The Great Depression*, p. 108) that exchange depreciation is "too crude" a method of altering price relationships, I think he is merely saying that it will not do everything. He does not point out that the policy of deflation through restrictive discount policy is equally crude in so far as its effects are intended to be general, and that in so far as the effects of this policy are not general, it introduces new disturbances. It is not particularly appropriate to check the flow of investment as a means of causing a reduction in particular wage rates.

I am not speaking here of undervaluation of a currency as a means of increasing one country's prosperity at the expense of that of others, but simply of the possibility of avoiding participation in a deflationary movement.

It is sometimes argued that the important price changes in a period of cyclical depression are changes in *relative* commodity prices, and that these cannot be obviated by exchange movements which merely alter *general* price relations between countries.

This argument overlooks in the first place the fact that countries are more or less specialised in their production of international trade commodities, and that their whole internal price and income structures are closely bound up with the price of their international specialities. If then the relative price changes concern the products of different countries, exchange depreciation (permitting the maintenance of local prices) is a means of avoiding or mitigating deflation in the countries whose products are declining in value. I think this point has an important application to countries producing primary agricultural products and raw materials.

In the second place, relative price changes do not by any means constitute the whole story of price changes during a depression. At least as important is the general downward tendency of prices. Now by freeing its exchanges a country in the throes of a depression does not *ipso facto* suspend the tendency to deflation. But if in a particular country the deflationary tendencies are less strong than elsewhere, the recuperative forces stronger, there is a presumption that the freeing of the exchanges will bring relief from the deflationary pressure. There is also, of course, greater scope for the prosecution of reflationary policies in the absence of an international standard.

So far as *price* movements are concerned, therefore, it is not impossible for a country with an independent currency to insulate itself from much of the effects of a world trade depression or to escape the especially acute deflation which might be its share. This is not to say, however, that such a country can escape the effects of the contraction in the volume of world trade. (We are ruling out, it must be remembered, the possibility of the country increasing its share of the existing trade by undervaluation.) Even if its price and income structure is in the main kept intact, one would expect to find unemployment in the export industries and probably depressed prices of exports. In the case of a country abandoning the international standard during a depression, it might be said that this would of itself aggravate the general contraction in trade through the effect of uncertainty as to exchange rates. But, on the other hand, the maintenance or enlargement of the market of one country is in itself a contribution towards the revival of trade in the world at large. I do not think we can decide on general principles which effect will be greater.

II

We may now turn to consider some of the peculiarities, real or alleged, of a régime of flexible exchange rates.

In his introductory chapter on International Trade under Inconvertible Paper,[1] Taussig, following Angell, finds it to be a special feature of the case that variations of exchange rates effect an equalisation of remittances, or of the balance of payments, immediately, that is before the eventual adjustments of demand have taken place. To quote certain significant sentences: "The situation is of a kind not unfamiliar in economic analysis, that in which two *fixed* quantities meet" (my italics). "The essential point is that the price of foreign exchange . . . depends at any time on the respective volume of remittances. It results from the impact of two forces that meet. The outcome is simply such as to equalise remittances, such that the money value of the two expressed in the currency of either country is the same" (p. 344).

I have already dealt with this view elsewhere (in my *International Trade*). To recapitulate briefly, it is true, of course, that changes in exchange rates may alter the value of payments under existing contracts from the point of view of one of the parties. What is not true is that this necessarily tends to equilibrate the balance of payments. If all the payments contracted for between two countries are fixed in terms of the currency of one of them, it is clear that no variation in the exchange rate can alter the relation between the two sides of the account. If the payments are fixed some in one currency and some in the other, a change in the relative values of the currencies is likely to affect the balance ; but we cannot say which way the balance will be affected by a given movement of the exchange, unless we know how the payments are distributed between the two currencies. The depreciation of a country's currency in exchange, which Taussig represents as a means of wiping out a deficit in that country's international balance, would only serve to increase the deficit, if its credit items were mainly denominated in its own currency and its debit items mainly in the foreign currency.

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[1] *International Trade*, Chap. 26.

The analysis which Taussig presents in support of his opinion appears to contain two flaws. The first is simply a slip, as a result of which the same term is used in successive stages of the argument in two quite different senses. Taussig takes an example of two countries, U.S. and U.K., having independent currencies. Starting from a position of equilibrium, a change is introduced in the form of a movement of capital from England to America. It is assumed for convenience that all transactions are settled through the exchange market in New York—which means presumably that the payments are denominated in sterling. As a result of the loan or capital movement, more sterling is offered in the New York market : at the same time, runs the argument, " there is no more demand for sterling exchange than before : no more purchases of British goods are made than before, and no larger remittances have to be made to London." We may pass over here the assumption that the purchases of British goods will not be affected by the fact of the capital movement, and we must agree that commodity trade cannot be instantaneously affected by a movement in the exchange rates. Taussig's statement about the demand for sterling is then that the total amount of sterling required is fixed, demand being completely inelastic. But in the next paragraph the fixed demand for sterling is taken to mean that " there is a given quantity of dollars offered for sterling "—a case of unit elasticity of demand—and the exchange equilibrium results from equating the fixed amount of dollars with the fixed amount of sterling. Clearly the second meaning is not in accordance with the facts assumed, whilst to reinstate the first meaning is to leave the problem of market equilibrium unsolved.

Indeed the problem would be insoluble if the position was that which Taussig assumes. But here we come to what I regard as the second flaw in the argument. The reader is asked to suppose that apart from the remittance of the new loan, all payments between the countries arise out of the purchase of goods. Since the transactions in goods cannot be extended or contracted in immediate response to the movements of the exchange rate, there results the " fixity of the two quantities " of which Taussig makes so much. But this leaves out of account the possibility of " equalising " short term capital movements, attracted perhaps by what is regarded as a temporary movement of exchange rates. It is these and gold movements which maintain the short run balance of payments equilibrium under gold standard conditions : and I suggest that the only difference—by no means an unimportant one—which the absence of the gold standard introduces in this respect, is that the short term capital movements have to perform this function alone.

III

We noticed just now that Taussig ignored in his example the direct influence which the import of capital might have on the trade in commodities. It is generally recognised to be a defect in his whole treatment of international capital movements, that he assumes the necessary adjustment in trade to be brought about through extension or contraction of the existing demands by changes in the terms of trade, without taking account of the shifting of demands in consequence of the redistribution of spending power implied by the transfer of capital. In the preceding section it was not necessary to pursue this point, because we were then concerned with the general question of how short run equilibrium is attained in the exchange market in face of a disturbance, and the disturbance might have taken quite another form, say a change in the demand for imports. We may now notice, however, that the shortcomings of Taussig's theory lead him to overlook a special difficulty which may arise when capital movements take place between countries not connected by a common monetary standard.

This difficulty arises from the absence of any means of making a monetary transfer from one country to the other—that is, of redistributing the joint supplies of means of payment—as an accompaniment of the redistribution of incomes, or spending power, directly resulting from the movement of capital.

Under gold standard conditions such monetary transfers can be brought about directly by gold movements; even without gold movements much the same effect can be produced by the creation of notes or deposits in the receiving country against balances held in the lending country—a practice extensively followed, I think, when capital has been flowing from the leading financial centres to the more backward countries. This mechanism may not have been adequate in all cases: it would be likely to break down when the movement of capital was away from a country with scant gold reserves and poor international credit. But it seems to have worked very often; and it seems to be altogether lacking, as an automatic mechanism, when the gold nexus is missing and exchange rates are liable to fluctuation.

It should perhaps be emphasised that the change in incomes or spending power of which I am here speaking, and to which the monetary transfer is to be the accompaniment, is the *primary* change involved in the capital movement itself. Under gold standard conditions a further change in incomes may be necessary in order to bring about the real transfer of capital in goods—that is a change in the level of incomes earned in production or factor prices, involving a change in the whole of the domestic price structure. This *secondary* change in incomes—which may not be necessary at all—is analytically quite distinct from the first. In the absence of the gold standard, exchange rate variations can, as we have seen, be a complete substitute for the second type of change in incomes. Just because their effects are equivalent to the changes of income associated with changes in the factor terms of trade, they cannot be a substitute for changes in income not so associated.

There must be then this primary shift in incomes or spending power expressed in the money of the receiving country, and the argument is that this requires a transfer or redistribution of money or means of payment. Robertson, who was perhaps the first to call attention to this point,[1] contented himself with pointing out that money balances must normally change proportionally with "buying power."

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[1] *Economic Essays and Addresses*, p. 174. It is not necessary for me to discuss here certain special points in Robertson's treatment of the subject, relating to gold standard conditions.

This presentation of the matter should perhaps suffice, but a different view is taken by a recent writer, Nurkse, and an examination of his argument may make the subject plainer.[1]

Unlike Taussig, Nurkse recognises that the transfer of capital involves directly a redistribution of spending power, but he denies that this in itself requires a redistribution of means of payment. In summary, his argument runs as follows. Suppose that the extra spending power in the receiving country B is devoted to buying just those things which people in the paying country A give up buying because of the curtailment of their purchasing power. In this case there will be no change in values, and, he argues, no monetary transfer (Geldmengenverschiebung). So far as the people in B buy additional A products, they can do so with A currency. So far as they buy additional B products, they will, it is true, require B currency: but they can acquire this by selling exchange on A in their own country. In doing this they will be simply filling the gap in the exchange market caused by the decline in exports—for by hypothesis, the extra B goods to be purchased at home are goods which otherwise would have been exported to A. Thus, he says, it is only in so far as the redistribution of spending power results in a re-direction of demand as between A products and B products and changes values, that a monetary transfer is necessary: and this might conceivably be a transfer from the receiving to the paying country.

What is, I think, true in this argument, is that no monetary transfer is necessary in so far as the recipients of the foreign capital spend their funds directly in the lending country. If, however, the adjustment in trade takes the form of a reduction in the exports of the borrowing country, the position is that importers in B will purchase exchange from the recipients of foreign capital instead of from the exporters, and this means that this stream of B money, instead of going immediately from the importers to another class of B merchants or producers, will only reach these circles as and when it is spent by the borrowers. There is a hold up in the industrial circulation because of the interposition of a new set of reservoirs. Moreover, essentially the same thing will happen if the adjustment takes the form of an increased consumption of imports by others than the borrowers, induced perhaps by a change in the terms of trade: in this case a part of the money stream is diverted from B's home market producers and only reaches them later as the borrowers spend. (The case of reparations payments may also be noticed, in which the immediate recipient (the government) is not the same as the ultimate beneficiary, and an increased volume of circulation is required to *start* a smooth transfer.)

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[1] R. Nurkse, *Internationale Kapitalbewegungen*, esp. pp. 131–2, 144.

Generally, then, it appears to be necessary that the direct increase in spending power in the borrowing country should be accompanied by some increase in money supplies, if the flow of money to the producers of that country is not to be checked. The effect of such a check would be to produce deflation in the borrowing country, which would impede the real transfer and cause, in the case we are considering, exchange appreciation. Transfer would then be resumed, again producing deflation, and so the cycle of deflation and appreciation might go on—indefinitely presumably until trade depression stopped the flow of capital.

This difficulty can, however, be met. We have seen that in the absence of an international standard there is no automatic or quasi-automatic mechanism for the redistribution of money supplies.[1] But it is not necessary to assume that the supplies of money in each country are fixed, and it is not impossible that they should be varied in the appropriate manner. Variations in the quantity of money as required by international capital movements would be quite compatible, moreover, with a policy of internal price or income stabilisation. The analysis does show, however, that a special problem of management arises in this direction in the case of independent currencies.

It may also be said that the importance of this point is reduced by the fact that international capital movements will be limited in the conditions assumed. But even if this is true of normal capital movements, there are abnormal capital movements in relation to which the preceding analysis is equally relevant.

IV

Up to this point we have been considering the possibility of achieving international equilibrium through appropriate movements in exchange rates. This, however, is only part of our problem. Given that there is an appropriate exchange value for each currency in terms of the rest which will give equilibrium, the possibility that the actual value will be something different, that the currency will be undervalued or overvalued, has also to be considered. Their liability to inappropriate fluctuations in exchange value is, of course, one of the main grounds on which independent currencies are condemned.

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[1] Mr. Paish reminds me that the operations of an Exchange Equalisation Fund may reproduce part of the gold standard mechanism, if purchases of foreign currencies lead in effect to an increase in the home money supplies. In this article I ignore this possibility.

Perhaps we should first examine the meaning of the terms "undervaluation" and "overvaluation." Many writers approaching the question under the influence of the Purchasing Power Parity theory endeavour to calculate the appropriate rates of exchange by reference to the movements of national price levels from some base date, assumed to be a period of equilibrium. Divergencies in the actual rates from these computed parities are then described as cases of undervaluation or overvaluation. The objections to this way of dealing with the matter are familiar. The index numbers used, generally based on wholesale prices of staple commodities, are inappropriate: it is difficult to find a satisfactory base date: above all, the P.P.P. theory assumes a constancy in the basic conditions of international trade and indebtedness which is far from characteristic of the actual cases which we have to study.

I suggest that the only test of the appropriateness of an exchange rate is its effect on trade, its tendency to produce or disturb equilibrium. A currency is "*undervalued*" at a rate at which the exports of the country in question tend to increase unduly in relation to its imports, "*overvalued*" when the imports tend to increase unduly in relation to exports. "Undervaluation" means that a country gets more than its proper share of the world's markets, "overvaluation" that it gets less.

This approach has the advantage of starting from the actual ground of complaint in the disturbance of balances of trade. But obviously not all such complaints are justified, and in order to complete our account of undervaluation we have to explain the circumstances in which a relative increase in the exports of a particular country is to be considered "undue."

Undervaluation may come about, as it were, spontaneously, as the result of the actions of individuals seeking other objects, or it may be the result of deliberate policy. In the latter case the monetary authority may force down the exchange value of its currency either with a view to capturing trade or in the hope of raising internal prices, or with both objects. I do not wish to discuss these measures here, because the subject with which I am concerned is the possibility of achieving international equilibrium in a system of variable exchange rates, given that this is the goal desired.

What I call, by contrast, spontaneous undervaluation results from a flight of capital from a particular country or from speculation on a future fall in the value of its currency. In either case, whether the motive be fear of loss or hope of gain, the primary disturbance is an abnormal movement of capital away from the country in question.

Now it is to be observed that undervaluation increases exports in relation to imports by an amount equivalent to the abnormal capital movements. In the circumstances we are considering, there is likely to be a certain amount, perhaps a large amount, of swapping of titles in terms of the different currencies between bull and bear speculators; but the *net* change in capital transfers is necessarily equal to the change in the trade balance. It will thus be seen that, from the point of view of the country with the undervalued currency, the relative increase in exports is only "undue" in the sense that the capital transfers which are its cause are abnormal: given these capital movements, the increase of exports in relation to imports is strictly necessary. It will also be seen that from this side we cannot diagnose the existence of undervaluation with precision, until we have determined what capital movements are to be considered normal.

The fact that the change in the trade balance is necessitated by the capital transfers does not, however, render it harmless from the point of view of the receiving or importing countries. An obvious disadvantage is the dislocation attendant upon any temporary change in the course of trade. A more fundamental difficulty is brought to light when we apply to the case the analysis of a preceding section. We have seen that an import of capital should be accompanied by a monetary transfer, an increase of means of payment in the receiving country, if deflation is to be avoided. Now it is particularly unlikely that an expansion in the money supply will occur in a country receiving refugee capital. Actually there is quite likely to be a contraction in the effective supply of money, owing to the diversion of the money acquired by foreigners into the financial circulation (including savings deposits). It is the increased supply of goods to stationary or declining markets, which makes this phenomenon so objectionable: and it is the failure of the market to expand appropriately in the countries receiving the capital, which justifies the view that the capital exporting country is obtaining an undue share of the world's markets.

There is clearly a serious problem here. The nature of the problem would perhaps be more evident, if instead of speaking of the effects of undervaluation in disturbing trade balances, we spoke of the difficulty of accommodation to certain types of capital movement.

Undervaluation and overvaluation are, of course, opposite sides of the same case. We may, however, regard them as contrasting cases if by undervaluation we mean the undervaluation of one currency as against most others, by overvaluation the overvaluation of one against many. In the latter sense, overvaluation has been most common in the past in cases in which the return of a currency to its old parity after a period of depreciation was anticipated. In the critical conditions of recent years, overvaluation of certain currencies has been the result of the superior confidence felt in the monetary and financial conditions of a few countries. The countries remaining on the gold standard have suffered in this way so long as their continued adherence to the old pars has been considered assured; and they have been affected in the same way indirectly by the flight from other currencies into gold itself. There have probably also been certain tendencies making for the overvaluation of sterling. The formation of the Sterling Bloc has certainly encouraged the accumulation of short term balances in London at a time when we do not need short term loans.

V

Countries have often sought to protect their home markets from "exchange dumping" by special import duties, and, more recently, by import quotas. Since these measures must tend to increase the depreciation of the "undervalued" currency, direct quantitative restriction by quotas is more likely to be effective than the imposition of duties. But neither duties nor quotas can protect from competition in other foreign markets: in fact, given the capital movement, these protective measures can only have the effect of increasing the pressure of competition elsewhere.

Often countries with undervalued currencies have themselves taken measures to restrain the flight of capital and the operations of bear speculators. But these measures tend to increase panic, and are only really effective when they extend to a complete control of all trade and intercourse with foreigners. The only satisfactory way of dealing with the problem from this side—or indeed at all—is to remove the causes of the abnormal outflow of capital.

Looking at the problem from the side of the country whose currency tends to be overvalued, the temporary character of the capital import seems to preclude any attempt to accommodate the economic system to the inflow, as might be done in the case of a more normal movement. A remedy may be sought, however, in offsetting the abnormal capital inflow. Here we come to the important subject of Exchange Equalisation Funds.

Such funds can be used for several purposes.

(1) The purpose to which special prominence was given when the British Fund was established was to smooth out short period variations in the exchanges. This may be taken to mean that the Fund is to offset chance and seasonal variations in other balance of payments items by "equalising" short term capital movements. It may also cover the provision of equalising short term capital movements in anticipation of the reaction of trade to adjustments in exchange rates.

(2) Exchange funds may be used to outmanœuvre exchange speculators. The use of the Morgan loan by the French authorities in 1924 is a classical example. Apparently the British Fund has sometimes been used for this purpose on a small scale.

(3) Finally these funds may be used to offset abnormal inward movements of capital.

This last purpose, the prevention of overvaluation, is in principle quite different from the deliberate undervaluation of the currency through the use of exchange funds. Unfortunately the two are easily confused, and any case in which it is known or suspected that an Exchange Fund acquires foreign money more than temporarily gives rise to charges of deliberate depreciation, and possibly to countermeasures. In the absence of evidence with regard to abnormal capital movements themselves, these charges should be tested by reference to the trend of the other balance of payments figures with a view to determining whether in all the circumstances the expansion of the country's trade can be regarded as excessive. I do not mean to say that a tendency to undervaluation can be measured fully in the movement of the trade figures. The tendency of one country to expand its trade unduly will meet the resistance of falling prices in other countries; and I am aware that those who complain of undervaluation do so as much on the ground that it provokes deflation as on the ground that the offending party extends its trade unfairly. Nevertheless, I think that undervaluation must leave its mark on the trade figures. Even if foreign prices fall almost immediately, foreign costs will take time to adjust themselves, and production for international markets will be checked. I think, therefore, we should be sceptical of charges of undervaluation which cannot be supported by reference to trade figures.

On these grounds the charges of causing the undervaluation of sterling which have been directed against the British Fund have always seemed to me unjustifiable. It is true of course that since 1932 there has been a considerable expansion in the volume of our exports in relation to that of our imports. But it is admitted that our previous position was insupportable; and at the time when the accusations were loudest, we had merely succeeded in bringing our current credits about to the level of our current debits, and we still had a mass of short term foreign indebtedness to repay. The foreign funds or gold acquired by the Equalisation Account appear to represent therefore merely an offset for new short term foreign indebtedness.

There is, however, a further problem. How is the offsetting to be carried out? In the particular case just referred to, if it is not true that we have undervalued sterling, may it not be true none the less that we have contributed to the *overvaluation* of the French franc, by offsetting movements of capital from all parts of the world by acquiring French funds? Or that we have similarly contributed to the overvaluation of the gold currencies in general by purchasing gold beyond our ordinary share in the new gold production?

In this particular case a defence might possibly be found for our action in the fact that France has more than her share of the world's gold stock. It might be said that if there is to be eventually a general return to the gold standard, there will have to be a redistribution of this gold, and this will necessarily be accompanied by a disturbance of the trade balance which will be unfavourable for French industry. Accordingly our action could be regarded as merely beginning a necessary process rather earlier than would otherwise have been the case.

But, whether true or not, this special argument does not dispose of the general problem. There is an abnormal shift of short term capital from country A to country B, which the authorities in B desire to offset. If the shift of funds is due to misguided speculation on exchange movements, it is simple enough to effect the offsetting by taking up funds in A. But if the flight of capital from A is due to fear of impending currency experiments or of the effect of budgetary difficulties on the currency position, or again is due to the threat of bank failures or confiscatory legislation, such direct offsetting would mean assuming the risks from which A's nationals are seeking to escape. On the other hand, to invest elsewhere on the same temporary basis may be prejudicial to the third countries. Some of the present objections to offsetting through gold purchases would be removed if the gold standard were universally abandoned, but obviously the risks of loss through fluctuations in the price of gold would be great. There appears therefore to be no satisfactory solution of this problem, short of restoring confidence in "country A."

Why Bother with Methodology?

By F. Machlup

The antipathy to methodology among a good many economists originated in the times when such discussions consisted mainly in advertising the writers' and maligning others' methods. Everybody wanted to promote his method among his competitors and colleagues. After a while economists became disgusted by these advertising practices and wanted to work, undisturbed by methodology, on problems of immediate practical interest. A pronounced indifference toward philosophising about methods developed.

Professor Robbins' *Essay on the Nature and Significance of Economic Science*[1] was taken as a challenge. His critics expressed the reluctance of economists to accept any " regimentation " of their subject-matter and their methods. However opposed they were to the " laissez-faire system " they wanted to enjoy laissez-faire in the production and distribution of their ideas without any (logical or methodological) barriers between the various fields of research. Dr. Souter took up the case against the regimentation of economics, but his plea, the *Prolegomena to Relativity Economics*,[2] was more heavily interlarded with Hegelian philosophy than a normal economist can stand. A still greater antipathy to methodology was the outcome of the discussion.

I wonder whether it is necessary to write on methodology in a form so forbidding that it is likely to drive away the reader from any attention to methodological problems. It can be shown, I believe, that profound philosophy is not essential to expounding methodological thought and, moreover, that certain methodological questions are directly relevant for discussions of immediate practical interest to any economist. The aim of this note is not at all to present a complete discussion of my subject, but to call attention in a simple manner to the significance of methodology for quite elementary economic propositions. If the alternatives are naïve simplification on the one hand, and unintelligible profundity on the other, I would rather choose —for the purpose of this note—the former. (I do think, however, that " simple " and " profound " are relative to the knowledge and interest of the reader). Simple reasoning about a few simple economic propositions will show whether or not methodological reflections can do anything for the economist's work.

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[1] Lionel Robbins, *Essay on the Nature and Significance of Economic Science*, London, 1932.

[2] Ralph W. Souter, *Prolegomena to Relativity Economics*, New York, 1933.

Statement (1): " If, because of an abundant crop, the output of wheat is much increased, the price of wheat will fall."

Statement (2): " If, because of increased wage-rates and decreased interest-rates, capital becomes relatively cheaper than labour, new labour-saving devices will be invented."

Statement (3): " If, because of heavy withdrawals of foreign deposits, the banks are in danger of insolvency, the Central Bank Authorities will extend the necessary credit."

Are these three statements imposed, so to speak, by " economic laws " ? Are they of equal economic relevance ? Are they equally true or false, equally necessary or probable ?

Professor Robbins undoubtedly would hold only the first statement to be based on the " pure theory of economics." He would consider the others merely " data " of economic relevance. Dr. Souter would protest against such hierarchical division. He would hold that all three statements are of the same logical nature, all equally hypothetical, all based upon certain assumptions, all of equal " necessity " or dignity.

A " verification " of the hypothetical statements by " real facts " would offer the same problems in all three cases. For each of them, of course, historical or statistical illustrations might readily be produced.

All three statements are concerned with human conduct or human behaviour. Can a distinction be made between the motives underlying these various types of behaviour ? The wheat growers sell their product cheaper because nearly every one of them prefers to take lower prices rather than not to sell at all. The rationale of such a decision is familiar. It is ordinarily labelled as " economic conduct." The engineers rack their brains to invent labour-saving devices because they expect high compensation. Manufacturers establish new laboratories because the expected inventions may be extremely profitable now that capital has become cheap and labour dear. The rationale of such thinking is in principle not different from that of the wheat-growers. The Central Bank Authorities consider it their duty to provide the member banks with liquid funds. The extended credits increase the profits of the Reserve Banks by increased income from interest payments; moreover, the member banks must fail if the credits are denied, and this is regarded as highly harmful for the whole economic system and would certainly raise powerful opposition against the directors. The latter want to keep their jobs. The rationale of such thinking is not much different from that of the wheat growers, the engineers, or the manufacturers. In principle, no essential distinction could be made between the character of the motivation of the conduct described by the three statements.

All three statements are " true " under certain assumptions and not true under others. Suppose they have proved untrue and we have to give reasons for it.

Statement (1*a*): " The wheat prices did not fall, because a Farm Pool bought the whole surplus."

Statement (2*a*): " No new device was invented, because in spite of all efforts no creative idea occurred to the would-be inventors."

Statement (3*a*): " The Central Bank Authorities turned down the request of the member banks, because Professor von Mises convinced them that the economic evils of credit expansion would be greater than those of the bank failures."

The reasons given for the cases in which the statements did not prove true are of course arbitrary. But we may perhaps find in the nature of the supposed (not improbable) reasons some essential differences which help us to clarify our problem.

Let us begin with the second statement, about " induced " inventions. When it is stated that under certain conditions " induced " inventions will come about, the tacit assumption is made that the disposition to expend effort in this way is practically all that is needed; hence, that there is something like a stock of unborn inventions available, quickly called into existence when a strong incentive is present.

It is true that in reality creative minds regularly succeed in finding some new things if strong efforts are put forth. But there is no "a priori reason" why the wish to invent should be successful. It can easily be imagined that the inventors' efforts will not be successful.

The third statement proved untrue when the Authorities consulted a "stony-hearted" expert and followed his advice. It is true that authorities do so very rarely. It is conceivable, nevertheless, that they will do so. There is neither an "a priori reason" nor a reliable statistical probability that they would not. There may be one man, or two or three, really influential in the Central Bank management. History gives us many instances of the one kind (readiness to support the banks), but also some of the other kind (refusal to support) of bank authorities' behaviour. We can imagine that their decisions are at times of the so-called deflationist type; and statement (3) would become untrue.

The first statement, concerning the wheat price, can hardly be invalidated so easily. As compared with the third, one difference becomes obvious. The decision of the one, two, or three managers of the official Bank Monopoly is uncertain. The tendency of the decisions of thousands and thousands of wheat-growers is far from being equally uncertain. It is, of course, probable that some sellers may decide to hold back and to wait until trade is better. It is even possible that other sellers may be willing, influenced by an adviser, to sell only a portion of their crop, provided they expect the others to do the same. But it is entirely improbable that all of a great many sellers do act in this way. If only a few producers should sell their whole increased output (and the price tendency stated in (1) then would be true!), more and more producers would follow suit and the statement would be proven to the hilt. The type of the competitive seller is not so likely to disappear from the economic stage as the type of the benevolent central bank manager. In other words, while it is conceivable that the men responsible for the money-system may or may not act in conformity with statement (3), it is not so conceivable that the men responsible for the wheat supply and therefore for the wheat price will fail to act in conformity with statement (1). As a result of this very fact politicians who are uneasy about a decline in wheat prices devise specific political measures in order to make statement (1) untrue, such as founding a farm pool which buys the wheat surplus. No one would make a

Statement (1*b*) : " If, because of an abundant crop, the supply of wheat is much increased, a farm pool will buy the surplus,"

and attach to this statement the same validity (within the particular conceptual scheme) as to statement (1). The foundation of the farm pool is no doubt an effect of the increased supply; but it is an effect which can be stated only with many additional assumptions about actions which are colloquially called political.

Most economists would confine the title " proposition in *economic* theory " to statement (1), and would not assign it also to statement (1*b*). This, because under (1) we think of a more general (more " anonymous ") type of behaviour than under (1*b*). If this is right it is only a matter of terminology whether one calls (1) a statement of a higher degree of generality than (1*b*) or whether one calls (1) a statement of economic theory, and (1*b*), with Professor Robbins, the statement of an economic datum.

The wish to avoid the drop in wheat prices is the economic incentive for the formation of the farm pool. This wish is by no means always fulfilled. If it is fulfilled we state this fact as a new economic datum, the consequence of which may be explained again in terms of general economic theory. We may apply the same principle to statement (2). The conditions expressed in statement (2) present a strong economic incentive for inventing new labour-saving devices. But the actual success of the induced efforts is better stated as a new economic datum. If this datum is given we begin, with a fresh breath, thinking about the economic effects of the newly invented devices, all the more because the effects of " induced " inventions are not different from those of " spontaneous " inventions of the same kind. There is no disadvantage perceptible in such a procedure. One may, however, stress that the changes in data (namely the occurrence of induced inventions) have developed from the economic situation itself.

According to the previous considerations it is by no means a " crime against logic ", and indeed has its definite usefulness, to hold that only statement (1) is based on pure economic theory, while statements (2) and (3) are best regarded as data for the application of further economic analysis. To say this is not to belittle their relevance nor to question their derivation from economic changes. They are effects of economic forces as well as the causes of further change. But the causal relations such as stated in (2) and (3) are derived from types of human conduct of a lesser generality or anonymity. To make a statement about the actions of the bank authorities (such as (3)) calls for reasoning in a stratum of behaviour-conceptions of much less anonymous types of actors. We have to know or to imagine the acting persons more intimately. It will make a great difference whether Mr. Keynes or Professor von Hayek is governor or expert adviser of the central bank. To deal with conduct of types of higher intimacy and, therefore, lesser anonymity means to deal with phenomena in a stratum of lesser generality.[1]

Dr. Souter will hold that the logical character of all the statements is the same. All of them are hypothetical, based on certain assumptions, and no discrimination of their logical dignity is justifiable. This is not questioned here. The point in question is whether or not the general validity in terms of a particular conceptual scheme is the same. We have found that this is not the case.[2]

An economist's reasoning may be seriously impaired if its causal chain contains links of minor general validity (in terms of the particular conceptual scheme), together with those of major general validity. This may be responsible for the divergence of a good many theoretical inferences of various economists. An example will illustrate what is meant.

In the theory of international exchange there are many statements of the type having high general validity. They enjoy widespread recognition among almost all students of this line of economic theory. But violent disagreement replaces unanimity as regards the theory of international transfer. One point of dissension lies in the assumptions regarding the methods of raising the money required for the purchase of the foreign exchange which is to effect the transfer to the creditor countries. An economist might for instance argue as follows: "The withdrawal of foreign loans was so extraordinarily heavy that the demand for foreign exchange could not be met. The balance of trade cannot be adjusted to such unnatural movements of capital." In this he assumes that the creditor's wish to be repaid and the debtor's wish to repay really mean that these wishes produce a movement of capital. But the cash-balances available would restrict it within very narrow limits. There is obviously no chance that all debtors have at their command, within a reasonable period of time, sufficient free cash-balances to buy the exchange wherewith to repay the debts. Hence, no heavy demand for foreign exchange, no immense outflow of capital is to be expected unless an auxiliary statement holds true—namely, our old statement (3), that a central bank supports the needy debtors with new credits. Then and then only the demand for foreign exchange becomes insatiable and the exports unadaptable to the flow of capital.[1] The economist's argument was valid, then, on the tacit supposition of central bank policy stated in (3); otherwise it would have been untrue. The economist's argument mingled statements of different degrees of general validity (validity, again, in terms of the particular conceptual scheme). If this is done tacitly or even unconsciously the argument is invalidated.

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[1] This analysis is an application (somewhat crude) of the excellent and extremely subtle apparatus of methodology in the Social Sciences, given by Dr. Alfred Schütz in his *Der sinnhafte Aufbau der sozialen Welt* (Vienna, 1932). A more precise use of Dr. Schütz's terminology would have to draw certain distinctions between degrees of anonymity and generality.

[2] Whether the distinction between the characters of the different statements is to be regarded only as one of kind or only as one of degree does not affect our argument. These concepts anyhow involve very difficult problems.

"Data" should be stated *expressis verbis*, because they are factors of a lower degree of general validity within the particular scheme. The statements of "pure economic theory" are the statements which assume the most general and anonymous types of behaviour. They allow us, therefore, to proceed in the economic analysis without restating and reiterating the assumptions again and again.

The failure to make distinctions between statements of different order often has serious practical consequences. For such reasons we ought sometimes to bother with methodology.

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[1] Cf. Fritz Machlup, "Die Theorie der Kapitalflucht," *Weltwirtschaftliches Archiv*, Vol. 36, 1932, p. 527.

Rationalisation and the Theory of Excess Capacity

By C. L. Paine

Recent developments in the theory of imperfect competition have given rise to propositions which might be construed as arguments for intervention in industry to prevent the 'wastes of competition.' It is argued that in imperfect competition firms will be driven to a position where their long run average cost curves are falling,[1] that if output were concentrated into a smaller number units costs could be reduced, that an increase in the number of sources of supply might lead to a rise in price[2]; and that therefore there might be a case for interference designed to eliminate this 'excess capacity.'[3] The purpose of this paper is, firstly, to examine the cases which can be made for such intervention on the assumption that long run costs are falling in the equilibrium position, and, secondly, to consider the effects of proposed and conceivable schemes of interference.

I

It has been found most convenient to develop the analysis that follows on the basis of certain ethical valuations. When therefore such terms as 'optimal' and 'desirable' are used, it must be remembered that the situations so described are only optimal or desirable given certain value judgments to which the present writer may not always subscribe.

Reformers in the economic sphere may be divided into three classes. Firstly, there are those who refuse to accept consumers' preferences in any form as a criterion for policy. Secondly, there are those who, while accepting consumers' preferences as the final criterion for determining the distribution of resources, nevertheless refuse to accept the weights which are attached to these preferences by the existing income structure. Finally, there are those who accept both consumers' preferences and the existing weights, and for whom the object of intervention would be the equalisation of the values of the marginal products of every factor in all directions.[1] In this paper we shall not be concerned with the first of these classes, while our attention will be mainly concentrated on the third.

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[1] Chamberlin, *Economics of Imperfect Competition*, pp. 104 *et seq.* and 171 *et seq.*, Kaldor, "Market Imperfection and Excess Capacity," Economica, Feb. 1935, and Robinson, *Economics of Imperfect Competition*, pp. 98 and 99.

[2] On this last named point see Kaldor, *op. cit.*, p. 33, and Hicks, "Survey of the Theory of Monopoly," *Econometrica*, February, 1935.

[3] It has been pointed out to me by Professor Plant that the use of the term "excess capacity" in this connection is not particularly fortunate. It is the essence of this concept that long run costs are falling, *i.e.* fixed plant has been adjusted to the output being produced. The existence of unused capacity would therefore be purely incidental, and the extension of the term to cover the present case would appear to involve a complete break with the sense in which the term has been used hitherto.

The existence of 'excess capacity' seems likely to open up new possibilities of intervention to those whose object is to alter the existing distribution of income, provided of course that a satisfactory scheme of rationalisation could be devised. For if the more eccentric consumers could be forced to buy a standardised product, prices might be lowered for the less eccentric consumers. The gain from standardisation here would be similar to that which could be obtained even in perfect competition, in the case of an industry working under conditions of decreasing supply price, except that in this last case there would be no additional difficulties of preventing the reductions in cost from being absorbed in increased monopoly profits. But this is a point which will be taken up in the second part of this paper.

The third class of reformer that we distinguished above would appear to have three main lines of attack on the existing state of affairs. Firstly market demand curves do not truly reflect consumers' preferences if the consumers' knowledge is very imperfect. Secondly even if consumers can be assumed to know what they are doing, market demand curves are often more inelastic than they otherwise would be owing to inertia,[2] *i.e.* costs, psychological or pecuniary, involved in transferring custom from one source of supply to another. Thirdly even if the preceding two elements are missing, in conditions of imperfect competition the flow of entrepreneurs into competing lines does not take place so as to equalise the values of their marginal net products. Let us examine each of these objections in turn.

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[1] This particular value judgment renders unnecessary the assumption usually made by certain writers in this field that individuals are in some sense equal. (See, for example, Kahn, "Notes on Ideal Output," *Economic Journal*, March, 1935.) Quite apart from philosophical difficulties about comparing utilities between individuals, it is quite obvious that schemes of interference built up on the assumption that incomes are equal are quite useless.

[2] The difference between imperfection due to inertia and any other kind of imperfection lies in the fact that in the case of inertia the rate at which the individual is willing to exchange two products depends on which of the two suppliers has his custom at the moment of transfer, while it is completely independent of this when inertia is not present.

At first sight the first objection does not appear to present much difficulty. There would seem to be a clear case for intervention designed to restore the conditions which would rule if knowledge of consumers were perfect. If the imperfection is due purely to ' irrationality ' then intervention should be designed to restore the conditions of perfect competition. But this apparently simple proposition has been disputed by Mr. Kahn.[1] It is perhaps worth while turning aside here to consider his argument.

Mr. Kahn is considering an ' industry ' where competition is imperfect purely because of ' irrationality '. Using a proposition of Mrs. Robinson's[2] that the value of the marginal product of an entrepreneur is equal to the value of the product of his firm minus the amounts of the factors he hires multiplied by their marginal products in the uses from which they have been attracted, he shows that the reward of an entrepreneur must be greater than the value of his marginal product if he draws his factors from his own industry. For the value of his marginal product (total receipts minus the value of the marginal products of the hired factors in their next best uses X their amounts) will be less than his reward (total receipts minus cost of the hired factors) by an amount (P – MR) X amounts of the hired factors, P and MR being the price and marginal revenue respectively in the use from which the hired factors have been attracted. The amount by which the value of an entrepreneur's marginal product falls short of his actual reward therefore varies directly with the degree of imperfection of competition in the field from which the entrepreneur draws his factors, and the quantity of the hired factors employed. Mr. Kahn concludes from this that if competition is equally imperfect all round, and if all firms had the same money expenditure on hired factors, the reward of all entrepreneurs would diverge from the value of their marginal products by the same amount. The same factors which ensure equality of reward in all directions would also ensure equality in the value of the marginal net products, and no case for interference could be made out. If, however, competition is not equally imperfect all round, or if the size of firms, as measured by their money expenditure on hired factors, differs between the various spheres of economic activity, then a case can be made out for the diversion of entrepreneurs from those fields where competition is abnormally imperfect, or the firms are large, to those fields where competition is less imperfect or where firms are smaller. "The reproduction of the conditions of the average degree of imperfection of competition is what is required."[1]

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[1] Kahn, *Economic Journal*, March, 1935, p. 29.

[2] " Euler's Theorem and the Problem of Distribution," *Economic Journal*, September, 1934.

We need not concern ourselves here with criticism of such concepts as "the average degree of imperfection of competition." Much more fundamental objections can be made against Mr. Kahn's argument. In calculating the value of the marginal products of the hired factors, he has to make use of the prices of the products from whose production they have been withdrawn. But in the case which we are now considering these prices are themselves partly determined by the 'irrationality.' Similarly the entrepreneur's reward will be partly determined by the price at which he can sell his own product, and this is also partly the result of the imperfection of knowledge. What social significance can therefore be attached to these concepts? We must surely fall back on the commonsense view that if competition would not be imperfect but for the imperfection of knowledge, then the reproduction of the conditions of perfect competition ought to be the objective of any scheme of intervention.[2]

We may now pass on to consider the case for rationalisation which is based on the existence of consumer's inertia. This form of imperfection undoubtedly makes demand curves of individual producers more inelastic than they otherwise would be. It may also be true that if the consumer had foreseen the possibility of price cutting he might have been better advised to attach himself to a different supplier.

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[1] Kahn, *op. cit.*, p. 29. It should be borne in mind that Mr. Kahn only intends this statement to apply to the case where imperfection of knowledge is the sole cause of the imperfection of competition.

[2] It is perhaps worth while noting here that, provided the knowledge of consumers was imperfect, the case for intervention would be equally strong even if competition were not imperfect in the sense that individual demand curves were not horizontal straight lines.

But all this is precisely analogous to the case of an entrepreneur who lays down a piece of fixed capital equipment without foreseeing a fall in the demand for its services. Bygones are bygones, and no case can be made for forcing consumers to undertake costs which at the existing price gap do not seem justified to them. The existence of consumers' inertia does not make the case for intervention any stronger, even though the number of firms and the degree of 'excess capacity' is thereby increased.[1]

In passing to the third class of objections to *laissez-faire* distinguished above, we must note two possible lines of attack, one of which is associated with the name of Mr. Kaldor and the other with that of Mr. Kahn. Mr. Kaldor's attack is based on the fact that, if any producer reduces his price, the immediate increase in his sales is not so great as the ultimate increase, since as a result of his cut one or more of his competitors may be forced out of business.[2] Unless the producer fixes his price with regard to his long run demand curve, *i.e.* unless he acts duopolistically, economic waste will result. Moreover, in such circumstances it would pay consumers to concentrate their purchases on a few firms and so get the benefits of standardisation. Such a high degree of farsightedness, Mr. Kaldor argues, can be expected neither of the consumers nor of the producers.

Unfortunately Mr. Kaldor has not considered this problem in terms of the equalisation of marginal net products, nor as far as I can discover does he advance any reason for preferring the long run demand curve to the impact demand curve. It may be worth while, therefore, to translate his argument in terms of marginal products. Excess capacity is wasteful then if it results in the value of the marginal product of any factor being different in different uses. But whereas it may be comparatively easy to determine the marginal physical products, by what prices are we to multiply these quantities—the prices which would rule if the product it was proposed to eliminate continued to be available at the old price, or the prices which would rule after the consumers of the eliminated product had been compelled to transfer their expenditure elsewhere? If we adopt this last set of prices we are compelling the very people who are most harmed by the proposed rationalisation scheme to use their transferred expenditure in voting for it. We are making them pull on the other end of the rope as well as their own end.

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[1] It may perhaps be doubted even whether inertia will tend to increase the degree of surplus capacity, for though it will make demand curves less elastic, it will also make more difficult the entry of new producers.

[2] Economica, February, 1935, p. 50.

This dilemma, that the prices after the transfer of resources are different from the prices before the transfer, does not arise when this kind of analysis is applied to a perfectly competitive system. For here we are dealing with increments and decrements so small that we can assume the effect of the change on prices is negligible. In the problem under consideration, however, this difficulty becomes all-important. For the elimination of any particular firm, which has oligopolistic relations with other firms, must have an appreciable effect on the prices at which those firms can sell their products. If this is not so there ceases to be any point in Mr. Kaldor's distinction between the long and the short run demand curves. The two coincide. In using the long run demand curve as the criterion of social desirability, therefore, Mr. Kaldor is adopting the second of our two sets of prices, whereas, though it may be doubted whether this kind of analysis has any application at all to the problem under consideration, it is clear that, in so far as it has any relevance at all, the first set should be used.

We may now turn to Mr. Kahn's analysis[1] of the distribution of resources where the imperfection of competition is not due to imperfect knowledge. Mr. Kahn rightly points out that the measure of the loss to consumers where a product is eliminated completely is not the value of the output of the firm, but the value it would have if it were sold under conditions of perfect discrimination. In computing the marginal product of any entrepreneur, therefore, we must add to the value of the output of the firm the increase in its receipts which would result from perfect discrimination, and from this we must deduct the value of the marginal products of the hired factors. This addition which has to be made to the total receipts of the firm will in general vary with the elasticity of demand, though it cannot be regarded as the area under the demand curve. Where, therefore, an entrepreneur draws his factors from firms subject to roughly the same degree of imperfection as himself, there would appear to be no case for intervention. For the addition to total receipts which would result from perfect discrimination, and the difference between the value of the marginal products of the hired factors and their actual cost will both vary with the degree of imperfection, and may therefore be regarded as roughly offsetting each other. As Mr. Kahn points out, however, when entrepreneurs draw their factors from firms subject either to more or less imperfection than themselves the value of their marginal net products is likely to exceed or fall short of their actual rewards. There would in fact appear to be a case for diverting entrepreneurs from those fields which draw their factors from firms subject to more market imperfection than themselves, and diverting them towards those fields drawing their factors from firms subject to less market imperfection than themselves.

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[1] Kahn, *op. cit.*, pp. 33 *et seq.*

But this last case of Mr. Kahn's is merely part of the general proposition that in conditions of imperfect competition the 'ideal' output can only be achieved by diverting factors from fields where the imperfection is small towards fields where the imperfection is great. The hired factors and entrepreneurs therefore have to be shifted in the same direction, and Mr. Kahn's case is therefore seen to be irrelevant to our present inquiry. For the problem of eliminating excess capacity, *i.e.* of making firms larger, only arises when entrepreneurs and hired factors have to be shifted in *opposite* directions.

It may perhaps be convenient at this point to summarise our conclusions. We have seen that the existence of 'excess capacity' opens up new possibilities of interfering with the existing distribution of income. Secondly, where knowledge is imperfect to an unequal degree the more ignorant might conceivably gain from the intervention of the less ignorant, and the objective of such intervention ought to be the restoration of the conditions which would rule in the absence of imperfect knowledge. Thirdly, we have had to reject the case for rationalisation based on the existence of inertia, and the lack of 'farsightedness' on the part of producers and consumers. Finally we have seen that imperfect competition may lead to a general 'maldistribution' of resources, but that this is irrelevant to the problem of surplus capacity since entrepreneurs and hired factors have to be shifted in the same direction.

II

So far we have been concerned purely with diagnosis; we now have to consider possible remedies. Any scheme of interference must satisfy at least two conditions. It must of course eliminate the excess capacity. But what is possibly even more important, it must prevent the reduction in costs from being absorbed in increased monopoly profits. There is a good deal to be said for the view that if we must have monopolists, in a world of rigid factor prices, it is better to have them inefficient—at any rate so long as the inefficiency does not affect the prices charged. The whole case against the view that the causes of unemployment are mainly technological rests on the assumption that reductions in costs will be followed by reductions in prices. If the benefit is not passed on to consumers there must necessarily be a net decrease in the money demand for factors. Excess capacity would thus appear to be a kind of safety valve, ensuring that, in those cases where technical innovation would cause unemployment, the reduction in costs would be offset by inefficiency from other causes, and any scheme of intervention must be devised so as not to interfere with this very useful function.[1]

The most obvious form of interference, and the one most commonly advocated, is the prohibition of the entry of new producers into all fields where market imperfection is important enough to give a considerable degree of 'excess capacity.' If the 'industry' had already got into equilibrium, that is if 'excess capacity' was already fully developed, this policy could do nothing but harm, since, as will be argued later, it must have the effect of making each producer's imagined demand curve more inelastic. The policy would only be efficacious, therefore, if the 'industry' had not yet got into full equilibrium, or if demand was expected to increase in the future. In these last two cases it would be effectively the same as a policy of eliminating a certain proportion of the existing producers, and in what follows the two policies will be treated as identical.

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[1] The analysis of technological unemployment appropriate to perfect competition is quite different from that appropriate to imperfect competition. In perfect competition the fall in prices will be the *same* as the fall in costs, and if the elasticity of demand is unity there will be no unemployment unless the invention is labour saving in Dr. Hicks' sense, while a capital saving invention would actually increase the money demand for labour. If the elasticity is less than unity there will be a decrease in the demand for factors in the line in which the invention takes place, but an increase in demand in other lines. An elasticity greater than unity would give an increase in the demand for factors in this line, but a decrease in consumer's expenditure on other commodities. In imperfect competition, however, the price fall may either be smaller or greater than the fall in *average* costs, but only rarely will it be the same. The money demand for factors may either decrease or increase therefore, but conditions of free entry would ensure that in all those cases where technical innovation would lead to unemployment this slack would be taken up in the form of excess capacity. On balance, therefore, we may say that, unless inventions are predominantly labour saving, free entry in conditions of imperfect competition will ensure that such technical innovation as is not patentable will cause a net increase in employment.

It is theoretically conceivable that a policy of the type now under consideration should give lower prices. The exponents of this view argue that the effect of restriction of entry would be to raise the demand curves of those producers left in, and this, given certain conditions of demand and cost, might induce them to lower their prices.

The conditions under which such a price fall would take place are either falling marginal costs (if the elasticity of demand at every price remains constant or decreases), or an increase in the elasticity of demand (if marginal costs are constant or rising not too sharply). It might perhaps be argued that since falling average cost is the criterion of excess capacity, there is a presumption that prices will fall unless the elasticity of demand for the remaining producers decreases considerably. But average costs will go on falling after marginal costs have begun to rise, and I suggest that unless there is a very considerable degree of excess capacity indeed, marginal costs will either be constant or rising. On the whole therefore the most reasonable assumption to make would be that marginal costs are constant,[1] and attention can then be concentrated on the elasticity of demand.

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[1] This conclusion is fortified by the fact that if we are trying to eliminate surplus capacity entirely, *i.e.* if we are trying to make each firm reach the point of minimum average cost, we must regard costs as rising on balance unless a chord joining the point of minimum average cost to the marginal cost curve at the pre-intervention output is falling.

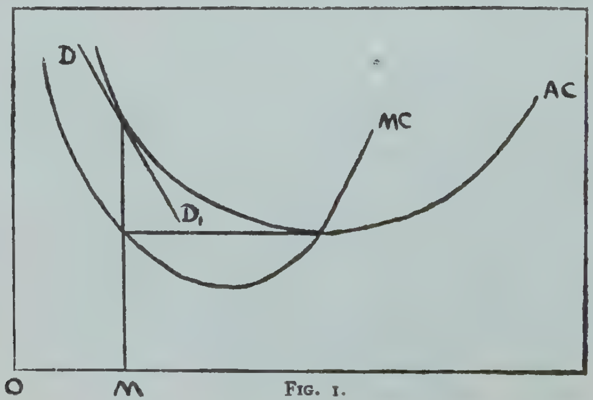

FIG. 1.

Thus in figure 1 marginal costs are rising on balance unless the pre-intervention output is less than OM. Such a high degree of excess capacity seems improbable.

If we accept Mr. Kaldor's contention that imperfectly competitive products can be placed on a scale according to the degree of substitution, and that any new product must lie between two others, thus making the chain of products 'tighter,' it becomes obvious that an increase in the number of firms will make the difference between any two neighbouring products smaller, thereby causing the elasticity of demand for any one to increase. It follows therefore that a decrease in the number of products would have an opposite result, and the intervention would cause each producer's impact demand curve (*i.e.* the demand curve which is drawn up on the assumption that the prices and number of other producers will remain constant) to become more inelastic.

But it is not his impact demand curve which determines the price policy of any producer, but his imagined demand curve, *i.e.* the demand curve which takes into account the producer's estimate of the probable effect of his own price policy on those of his competitors, including in this the entry of new producers and the exit of old ones. If each producer takes into account only the indirect effect of his own price policy on the *prices* of *existing* producers, his imagined demand curve will thereby become less elastic, since he may expect that if he lowers his price his competitors will follow suit, and *vice-versa*. On the other hand if he takes into account only the *number* of producers, his imagined demand curve will become more elastic, since if he lowers his price he may eliminate some of his competitors, while if he raises it he may expect to attract new ones. The effect of the policy under consideration would be to eliminate the duopoly element with respect to new competition and to intensify it with respect to the prices of existing producers. For both these reasons the imagined demand curve might be expected to become more inelastic.[1]

More important possibly than these duopoly elements would be the growth of express agreements and combinations, which would be inevitable when the increase in monopoly profits could no longer be threatened by the entry of new producers. In any case we have seen little reason to suppose that prices would fall, while we have had cause to believe that they would actually rise, or if this proved impossible owing to pressure of public opinion, that future benefits due to technical innovation would not be passed on to the consumer. One thing seems certain, however, and that is that prices would not fall as much as average costs. It has already been pointed out that in such circumstances factors must be released from the planned 'industry', without there being any counterbalancing increase in the money demand elsewhere. We now see why intervention of the type now under consideration could never be applied to a whole economy, for its success is dependent on the existence of a bottomless sea of perfect competition, which could

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[1] This is best illustrated diagramatically.

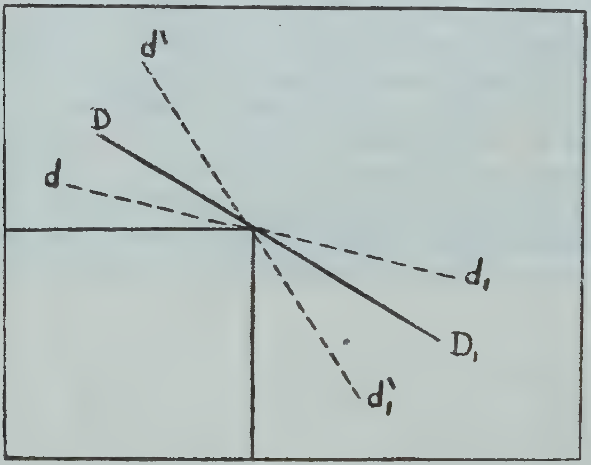

FIG. 2.

Thus in Fig. 2 DD_1 is any producer's impact demand curve. If our producer believes that existing producers will hold their prices constant, but that if he raises his price he may attract new competitors, while if he lowers it he may eliminate some of the existing ones, then his imagined demand curve will be something like dd_1. But if he takes into account only that if he lowers his price existing producers will follow suit, then his demand curve will be something like $d'd'_1$. In practice it will normally occupy some intermediate position, but in an extreme case the effect of intervention might be to swing the imagined demand curve round from dd_1 to $d'd'_1$.

absorb the released factors. In a world of rigid factor prices it could hardly be doubted that the alternative output would take the form of the enforced leisure of unemployment.

So far we have been considering the only scheme of intervention which in my view is practicable in the sense that it does not involve more knowledge on the part of the planning authority than it can be reasonably expected to possess. There are, however, at least two other conceivable schemes, which, though more complicated, are open to many fewer theoretical objections, and which therefore seem to merit some attention here. If a price equal to minimum average cost were fixed for each monopolist, it is obvious that no producer could cover his costs so long as he was in a state of excess capacity. Thus in Fig. 3, DD_1 is the demand curve of a monopolist, while AC and MC are his average and marginal cost curves respectively. If a price is fixed at MP it will pay the monopolist to sell an output OZ, his losses (QRST) here being a minimum. The losses thus inflicted would drive producers out of this field until the demand curve rose so as to pass through P. In

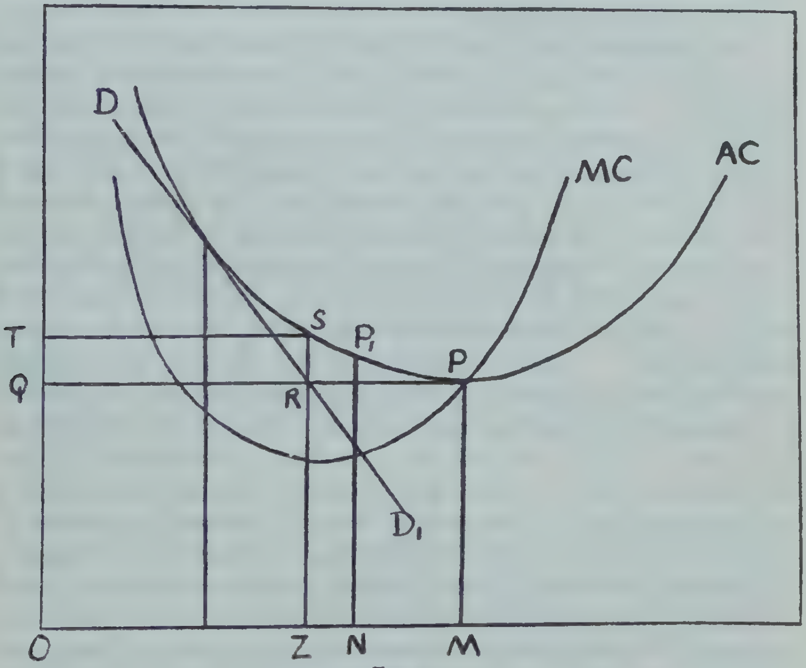

FIG. 3.

this case 'excess capacity' would be eliminated entirely, but it could be regulated to any desired extent by varying the price fixed. For example if the price were fixed at NP^1 the exodus of producers would cease as soon as the demand curve had risen so as to pass through P^1. This exodus would, of course, only take place in the long run, for so long as any fixed capital remained unadjusted to the new position it would only be necessary to cover prime costs. The planning authority would therefore have to decide whether it was going to adjust the industry to the short run data, in which case by the time the fixed capital had been amortised the rationalisation scheme would be completely out of date, or whether it was going to make immediate adjustment to the long run position, thus sacrificing all the fixed capital which had been adjusted to the pre-intervention situation.

Our analysis here would not be complete without an examination of Mr. Kahn's method of eliminating excess capacity. "The amount of the hired factors in any industry can be regulated by means of a subsidy (or tax). The number of entrepreneurs can be regulated by means of a lump-sum tax (or subsidy), levied on (or paid to) each entrepreneur. If each type of regulation is carried to the ideal point the lump-sum tax (or subsidy) allocated to each entrepreneur will be exactly equal in amount to the total subsidy (or tax) allocated to the factors of production which he employs."[1] Thus according to Mr. Kahn each industry could be treated as a self-contained unit, and it would not be necessary to tax one industry for the benefit of another. But this would be so only in the final equilibrium. If for example we take the case of a producer who is just covering his average costs, it is obvious that he cannot be made to produce a larger output without giving him a net subsidy or inflicting losses on him. This scheme would in fact work in exactly the same way as the one we have just been considering. It would inflict losses on producers and so drive them out of business, the complicated system of subsidies being necessary to ensure that the remaining producers do not raise prices.

The schemes of intervention which we have just been considering have certain theoretical advantages. In the first place the fall in prices would be at least equal to the fall in average costs, while if all firms had not been driven to the point where their demand curves were tangential to their average cost curves, the fall in prices would actually be greater. There would, therefore, be no decrease in the money demand for factors. In the second place it would not be necessary to restrict the freedom of entry, so that the possibility of the entry of new firms would force the industry to adapt itself to some extent to changes in demand and technique. Even so it could hardly be doubted that there would be a slowing up of the rate of adoption of inventions. An industry is normally forced to adopt new methods partly because the possibility of increased profits attracts new firms, and partly because of internal competition amongst old firms. The former influence would still continue even under our rationalisation scheme, but the latter would cease to exist if firms knew that any reduction in costs would be offset by a decrease in the official price.

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[1] Kahn, *op. cit.*, *p.* 29.

On the other hand the difficulties of these schemes are too obvious to need more than mention. In the first place, except in a world of identical cost and demand conditions, it would be necessary to fix a different price (or tax-subsidy) for each producer. In the second place it is hardly to be expected that the planning authority would be very successful in discovering the precise shape of the average cost curve of each producer, considering that more often than not the producer will not know it himself except in the neighbourhood of his pre-intervention output. Lastly, there would be the difficulty of assessing the compensation to be paid to producers for the losses inflicted on them by the price-fixing.

In this paper an attempt has been made to show that the existence of surplus capacity does not give rise to any new problems, and that intervention if it takes place at all must take place on grounds which would be equally applicable to a world where no single producer could control the price of the product he sells. Attention was then concentrated on the question of whether surplus capacity introduces new possibilities of attaining the objectives at which intervention aims. Here I tried to show that restriction of entry must have the effect of making the imagined demand curves of each producer less elastic, and that it would create a tendency towards monopolistic combination, so that prices would almost certainly rise. Moreover it would interfere with the very useful function which even the most objectionable forms of surplus capacity perform in preventing technological unemployment, while, since it is quite certain that prices would not fall as much as costs, factors must be released from the " planned industry " without there being any counterbalancing increase in the demand in other directions. Against a system of price control, however, we found fewer theoretical objections, though we had to reject even this on grounds of practicability. One thing does appear to have resulted from our analysis and that is that any scheme of rationalisation which is to obtain the results claimed for it, must enforce a rigid system of price control (either direct or through a system of taxes and bounties), and for this reason it is not likely to be popular with the business men. If one may turn a phrase of Mr. Kaldor's, the economists who distrusted schemes of rationalisation emanating from the business men weren't such fools after all.

French Monetary Policy

By R. G. Hawtrey

Mr. Philippe Schwob contributed to the August number of Economica an article on "French Monetary Policy and its Critics." Though the word "Critics" was put in the plural, the article named only one Critic, myself, with special reference to my book, *The Art of Central Banking.*

On reading the article through, my first impression was that, though there undoubtedly are important respects in which Mr. Schwob and I differ in the interpretation of events, yet over and over again he finds differences where there are none.

He starts off by saying that "many English economists, and above all Mr. Hawtrey, in interpreting the movements of gold since the War, seem to assume the Ricardian theory as their undisputed hypothesis. This theory argues that such gold movements can only be caused by price disparities in different countries. No one will deny that this is indeed a factor operating in certain cases, but it is not the only one" (p. 277).

Had he turned to page 144 of my book, he would have found that I dissented from Ricardo's theory on the ground that "it was fallacious to explain the adjustment wholly in terms of the price level." Possibly this passage would not in itself reconcile Mr. Schwob to my view, for his objection to the Ricardian theory is that "the psychological effect of monetary uncertainty has played a great part in the movement of capital" (p. 277), whereas my criticism merely put the consumers' income and outlay in place of the difference of price level as the channel through which monetary policy affects the balance of payments.

But he might have discovered from other passages that I do not by any means exclude causes of the type referred to by him. I devoted long passages of my book to the movement of capital by way of international short-term investment (particularly pp. 140–3, 181–8, 294–9, 406–11 and 412–25), and when I pointed out that "the gold standard is a safeguard against currency speculation only so long as it is working normally and commands confidence; the moment it is mistrusted, it provokes movements of money on the largest scale" (p. 296), or that movements caused by loss of confidence in a currency or by political motives are apt to be the biggest and the most disturbing (p. 423), I appear to have been very close to his point of view.

These passages, however, are in general terms, and have no specific reference to the movements of balances from and to France. Mr. Schwob alludes in his article (p. 291) to the flight from the French currency, in the years 1924–6, and adds, "Mr. Hawtrey is at great pains to deny both the possibility and the effects of this flight."

But I did not deny it at all. I pointed out indeed that the flight from the currency could not diminish the total amount of currency, since the notes were inconvertible, but could only diminish its value in terms of wealth or gold (p. 23). But, far from denying that the flight took place, I said that the gold value of the French note issue shrank to £220,000,000 in July, 1926, as compared with £450,000,000 at the end of 1924 and £600,000,000 in 1922. If there is any difference here between Mr. Schwob and myself, he has omitted to say what it is.

On the flight and repatriation of capital that occurred in the periods preceding and following the panic of July, 1926, I commented that "to every sale [of investments] there must correspond a purchase," and that "mistrust makes itself manifest not in an excess of sales but in a *fall of prices*" (p. 23). Mr. Schwob quite rightly points out that the position (at any rate in the case of a repatriation of capital) is modified by the existence of new capital issues, which are not sold by investors. He should, I think, agree in the view I expressed on p. 24 of my book: "there was a flight of capital in 1924–6 in the sense that there was little money placed in *new* franc securities. And there was a repatriation of capital in 1927 and 1928 in that the market subscribed large issues of such securities."

Mr. Schwob believes that the idea of the sterilisation of gold in France, "the most frequently ventilated" among "the ideas cherished by the Anglo-Saxon world," is not without some foundation. The gold reserves in the Bank of France rose from 1,080 metric tons in 1926 to 4,890 in 1932. (These figures actually exaggerate the extent of the movement, since they omit 134 tons of gold pledged with the Bank of England, which yet remained the property of the Bank of France in 1926, and an amount estimated at 270 tons in private hoards in France at that time.)

Nevertheless he holds that " a gold reserve even of 4,890 tons is not extravagant." Whereas France had 17.3 per cent. of the world's monetary gold in 1914, she had 25.7 per cent. in 1932. " The difference is an important one, but insufficient to account for a catastrophe of the magnitude of the present crisis " (p. 279).

I too made a comparison with the proportion of the world's gold held by France in 1914. My comparison related to the proportion held in May, 1931 (gold movements after that date not having contributed to the causation of the crisis), and I pointed out that the proportion was practically *the same* as in 1914 (p. 36). But that does not in itself detract from the catastrophic effect upon the world's market in gold of the rise of the French holding from £200,000,000 or 9.3 per cent. in 1926 to £450,000,000 or 18.3 per cent. in May, 1931.

Mr. Schwob, even if he does not accept this view, at any rate thinks himself bound to do what he can to clear the Bank of France of responsibility for the absorption of gold. He is particularly concerned to find an answer to my argument that the absorption of gold was due to the insufficiency of the note circulation at the level existing in December, 1926, to meet the monetary needs of the country.

Mr. Schwob objects that, in my comparison with 1914, I failed to take into consideration one important factor, in that I overlooked the part played by the velocity of circulation and only paid attention to the quantity of money (p. 277).

From the fact that the ratio of the clearings of the Paris banks to their deposits rose in the years 1928–30 to more than double what it had been before the War, he infers that there had been a corresponding increase in the velocity of circulation of bank credit. " The proportion of payments effected by cheque in the French economic system has increased. Therefore the volume of payments effected by fiduciary money must have been proportionally reduced "

(p. 283). He concludes that I am mistaken in supposing that "other things being equal the fiduciary circulation needs to increase in proportion to the volume of payments to be effected; for it is clear that other things are not equal" (p. 285).

Here he is attributing to me a statement I did not make.

After calculating (p. 16) that if the same purchasing power in terms of wholesale prices was needed as before the War, the currency would have to be 70 milliards, and, if the same in terms of wages, it would have to exceed 80 milliards, I proceeded: "Allowance would also have to be made for increased area and population and economic development generally. On the other hand any growth in the use of cheques and other methods of economising currency would lead to a relative diminution of currency, and a compensating growth in deposits. This last factor, though not absent, has up to now played a subsidiary part." But at this point Mr. Schwob drops his theory that the proportion of payments effected by cheque in the French economic system has increased, and puts quite a different interpretation on the increased Paris Clearings.

Having at the beginning of his article denounced "the time-old postulate of an identity between bank credit and money" as "one of those traditional illusions which the English, in particular, are more wedded to than they are to factual truth" (p. 278), Mr. Schwob none the less thinks "one is entitled to suppose" that the velocity of circulation of coin and bank notes has increased to roughly the same extent as the velocity of circulation of bank credit, because, as has been observed by Professor Divisia, "roughly the same types of payment are effected in both these media" (p. 283). He assumes accordingly that the velocity of circulation of bank notes increased in the same proportion as that of the clearing banks' deposits. For the year 1929, with a velocity 2.37 times that of 1913, this calculation (combined with certain other assumptions which I need not criticise in detail) yields a required circulation of 48 milliards.

The assumption here made that the ratio of Paris clearings to bank deposits can be taken as a sample of velocity of circulation generally, and that the latter will have increased in proportion to the former is dubious in the extreme. The Paris clearing house transactions are only a part of the total clearings of the country. The facilities which the Bank of France offers through its numerous branches for the transmission of funds are not confined to its own depositors, but are available to the clearing banks and their customers and are extensively used by them. Settlement through the Paris clearing house is an *alternative* to settlement through the Bank of France, and a growth of the Paris clearings does not necessarily mean anything more than the substitution of the former process for the latter.

To obtain a view of the progress of clearings as a whole, it is necessary to add the two portions together (see *Annuaire Statistique* for 1934, page 462):

	Paris Clearing House (milliards).	Bank of France *Virements* (milliards).	Total (milliards).
1913	14.5	165.2	179.7
1929	442.3	1378.9	1821.2

The total turnover has thus increased ten-fold or, in terms of gold, two-fold. Here is clear evidence of an increase in velocity, since the bank deposits had increased little more than seven-fold and the monetary circulation six-fold. (The monetary circulation is not irrelevant to the comparison, since the Bank of France facilities are open to note-holders.)

But it would be quite unwarrantable to infer that there had been an increase of, say, 50 per cent. in velocity at all points. The clearings at a financial centre are swollen by a vast mass of transactions arising from short loans, exchange dealings, stock exchange operations, etc., which far surpass those arising out of the production and sale of commodities. These financial transactions are based on a relatively narrow foundation of cash balances, and, whenever they are subject to fluctuations, the result is a disproportionate effect on the velocity of circulation of the system viewed as a whole. The experience of other centres supplies evidence that there has been a considerable increase in such transactions. London clearings increased from £16,436,000,000 in 1913 to £44,897,000,000 in 1929, the ratio to bank deposits being 16 to 1 in the former year, and 19½ to 1 in the latter. Clearings increased more than in proportion to the national income, which rose from £2,250,000,000 in 1913 to

£4,000,000,000 in 1929. And it is noteworthy that the velocity of circulation of the *currency* seems actually to have diminished, the currency in circulation being estimated at £190,000,000 in 1913 and £460,000,000 in 1929. The expansion of clearings in New York was even greater than in London.

Thus there seems good reason to suppose that the increase in clearings in France is to be taken as evidence not of a general increase in velocity, such as would enable a given volume of commercial and productive activity to be carried on with a relatively smaller supply of currency, but of a relative increase in the volume of financial transactions.

Mr. Schwob wisely treats his own calculation with some diffidence, saying that very probably it "is itself also erroneous, for it yields a maximum limit for the circulation which lies consistently beneath that which actually existed." It is not in accord with the facts. The explanation which he offers is that the excess (amounting in 1929 for example to 18 milliards) represents notes which were hoarded. Basing himself on "authorities with expert knowledge" (whom he does not name), he estimates that "from 1928 onwards the total volume of hoarded notes was about equal to half the total value of 500-franc and 1,000-franc notes in circulation."

His estimate for hoarded notes on this basis rises from 15 milliards in 1928 to 29 in 1931 and 32 in 1932 and 1933. If "hoarding" means holding notes instead of bank deposits, it is difficult to reconcile such an increase in hoarding with the increase in bank deposits (in the four principal commercial banks) from 23 milliards in 1926 to 39½ milliards in June, 1931. After June, 1931, there was indeed a decrease in bank deposits, and there is good reason to think that then hoarding took place (see *The Art of Central Banking*, pp. 35 and 38).

But the data for making any reliable estimate of hoarding do not exist. The formula quoted by Mr. Schwob is a mere guess. In any case the formula throws no light on a comparison between currency needs in 1913 and in the years following 1926. If there was hoarding in some sense in the latter years, it presumably prevailed also in 1913. In fact, when we are considering whether gold was imported into France to meet the country's currency requirements, we must *include* the requirements for hoarding.

Mr. Schwob would attribute the absorption of gold and foreign exchange in 1927 and 1928 to the repatriation of French capital. "This inflow of capital," he says, "had to be compensated by the creation of francs wherewith to purchase the inflowing securities" (p. 292). There seems to be some confusion of thought here. There were no "inflowing" securities involved. No doubt what is meant is that people with resources in other countries, who wished to acquire French securities, had to obtain francs to pay for them and gold would be imported for that purpose. But that does not mean that any permanent addition to the currency was involved. If additional notes were issued, they would pass into the hands of the sellers of the securities, and from them into circulation. If they were not needed in circulation, they would become redundant, and the gold would be exported again.

The absorption of gold in 1930 and 1931 Mr. Schwob attributes to foreign capital taking refuge in France. Here again the same argument applies. The import of capital might in the first instance result in an expansion of the circulation and an import of gold, but unless the additional circulation were *required*, a contraction would follow and the gold would be released.

"In 1930," says Mr. Schwob, "12 milliard francs of gold were imported and in 1931 18 milliards. Moreover France derived no advantage whatever from the possession of this gold; it merely served as an excessive backing to her note issue. But what else could be done with it?" (p. 292).

Clearly nothing else could be done with it. And so, after all his controversy, Mr. Schwob comes round to very much the same conclusion as I did. The gold was needed as an addition to the backing of the note issue. And why did the note issue increase? Not on account of any importation of capital, but because there was "hoarding". Hoarding is not very easily defined, and, apart from the primitive hoarding of the man who cannot be happy unless he sees and handles his money, it can hardly be distinguished from a slowing down of the velocity of circulation. When Mr. Schwob adduces hoarding as the explanation of the need for more currency, he is in effect abandoning his argument that the Paris clearings afford evidence of an *increased* velocity of circulation.

But in any case it is difficult to see why this view, that the absorption of gold was necessary to provide a needed expansion in the currency, should arouse his indignation. He seems to interpret it as an imputation against France.

Perhaps he is anxious to show that the need could not have been *foreseen*, and that no blame attaches to those who failed to provide against it.

The Sergent Committee, by whose recommendations the French monetary reform was mainly guided, *had* foreseen the need for more currency, and it was by their advice that power was taken to extend the note issue of the Bank of France above the maximum limit of 58½ milliards then in force by the amount of any additional gold and foreign exchange purchased. And though the Committee said that the advances by the Bank of France to the Government must not be increased, they did not propose to reduce them at all during the phase of *de facto* stabilisation, and thereafter they would only have reduced them gradually, as they might be replaced by commercial bills. Had this course been followed, the need for backing for the note issue would have been met to the extent of about 17 milliards without the use of gold or foreign exchange.

It was the measures resorted to in 1927 to reduce the advances by the Bank of France to the Government that I described as " deflationary finance on a great scale " (p. 16). Mr. Schwob attributes to me the conclusion " that a deflation was imposed on France as a result of stabilisation " (p. 277), and contends on the contrary that the crisis " was not connected with the stabilisation of the franc, but rather with its revaluation; it arose out of the disturbance in the national and international exchange situation consequent upon a sudden raising of the value of the monetary unit " (p. 289).

What he means is no doubt that the " stabilisation crisis " of 1927 was due not to the fixing of the franc at 2d. from December, 1926, onwards, but to the appreciation of the franc in the preceding five months. From this view I do not dissent. I only referred to the " stabilisation crisis " to say that " France escaped lightly " (p. 17), and to point out that, in consequence of the low level of wages, the compression of spending power, instead of causing depression and unemployment, led to a favourable balance of payments (p. 18). " The expectation that deflationary measures would bring about a reduction in the note issue was based on a misconception" (p. 16). With the franc pegged at 2d., "as fast as the Government created a scarcity of francs, the public made good the deficiency by buying currency from the Bank of France and paying for it with foreign exchange" (p. 18).

Thus it will be seen I entirely agree with Mr. Schwob's view that the stabilisation crisis, such as it was, was caused by the conditions prior to the actual stabilisation of the franc. When I used the term "deflation," I was referring to the repayment of advances from the Bank of France to the Government, a measure which, though deflationary in tendency, was in fact counteracted by the pegging of the franc at 2d. Mr. Schwob refers to "the deflationist policy which Mr. Hawtrey condemns" (p. 289). But I did not condemn it at all, and, so far as the world position is concerned, I quoted the reports of the Bank of France in support of the view that the effect of the extensive French purchases of foreign exchange was the reverse of deflationary (pp. 25–6).

This applies also to what he says of the forward purchases of foreign exchange by the Bank of France: "As for Mr. Hawtrey's final accusation, which declares that a final measure of deflation was in the end decided on—it reveals a totally mistaken view of the circumstances and the aims of the policy it condemns" (p. 290). I made no accusation, no condemnation, nor even any express reference to deflation. What I wrote was: "After August, 1927, there came a change of tactics. . . . The Bank of France continued to buy exchange at the pegged price, but it endeavoured to counteract the effect on the note issue by buying *forward* exchange" (p. 18). Then I added: "These forward transactions presently amounted to several milliards. But they failed to offset the spot transactions."

Mr. Schwob says that I was mistaken, and explains that "the French Government had suspended on January 10th, 1928, laws prohibiting the export of capital; but in order to be able to export them without incurring risks, the banks needed to be guaranteed against losses on the exchange" (p. 290). He does not quote any authority for this view, and, whatever the source of it may be, a reference to the dates shows that he has been misled. It is undoubtedly true that a policy of selling francs forward heads off people from temporary investment in francs, and one of buying foreign currencies forward induces them to make temporary investments in those currencies. But the evidence of contemporary newspapers shows that the forward purchases had already started by the late summer of 1927 (see the *Statist* of September 10th, 1927, p. 392) and had nothing to do with the measure of January, 1928. M. Paul Ricard, writing in the *Revue d'Économie Politique* for 1928, described the episode as follows: " Towards the middle of the year 1927, in face of the excessive liquidity of the money market, the idea was entertained of diverting abroad the flow of capital resulting from the conversion of foreign exchange into francs. It was then that there were started those operations of *reports en devises*, carried out by the Bank of France with the other banks." He adds that the operations began on July 31st, 1927, and that the amount outstanding reached three milliards by the end of September, and reacted to 2½ milliards at the end of December.

I suppose when M. Ricard refers to the policy as prompted by the " excessive liquidity of the money market " and when Mr. Schwob refers to it as aiming at " the provisional absorption of money funds ", they both mean much the same as I did when I referred to " satisfying the demand for francs in exchange for sterling, but without adding to the immediate supply of francs " (p. 18).

Mr. Schwob says that I appear " very greatly to regret that the rate of 100 [francs to £1] was not chosen (p. 230) ". But he is reading more into a remark of mine than it will bear. I showed (p. 12) that the wage index pointed to a rate of 80 to the pound, and proceeded: " It is not necessarily to be inferred that the franc ought to have been raised to that level. The rise from 200 to 120 was in any case a strain on the mercantile world. And a further rise would also have threatened the equilibrium of the budget " (p. 12). Then I added that " there is something to be said for the view that a somewhat higher value, say 100 to £1, might have been selected." Since wages rose from 5½ times the average of 1910 in 1926 to 7 times in 1930, clearly there was *something* to be said for it.

Mr. Schwob says that I had no right to argue on the basis of the world price level, since this level was itself falling (p. 285). It is quite true that at the end of 1926, when *de facto* stabilisation began, the world price level had been falling, but from then till October, 1929, it was nearly stable, and indeed from the Spring of 1927 it turned upwards. Nevertheless in my calculations I did include a margin to cover the contingency of a further fall of the price level, the possibility of which, in the circumstances of 1926, could not be disregarded. At a time when the British and American index numbers exceeded 140 (in terms of 1913), I assumed for France a price level round about six-fold that of 1913, corresponding to an index of only 120 in terms of gold.

Considering the prominence given in Mr. Schwob's article to attacks on my views, it is remarkable that there is not to be found one single quotation from my book throughout the article. It appears to me that, if he had referred to the dozen or more passages which I have cited from it, not only might he have avoided most of these attacks altogether, but he might have appended quotations from the book *in support* of his own views. The residue of controversy would, I think, have been found to fall within quite narrow limits.

A Reply to Mr. Hawtrey

By **Philippe Schwob**

First of all, I feel very pleased in thanking Mr. Hawtrey for the attention he has given to my paper. I am not sure that our theses are as close together as he thinks they are, and I shall try to make my ideas more precise in the light of his valuable objections. I beg the reader to excuse the " gallicisms " he may find in these few pages, but I prefer to write them myself in bad English than to have them translated. Though, thanks to the Editor, the translation of my original article was done with the utmost care, and though I myself thoroughly went through it, some nuances have been lost and even the exact meaning of my French sentences has sometimes been modified.

Of this, I find a first example in the title of the paper. In the French original, the word " critics " applied to the arguments against the French policy and not to the authors of the arguments. I think it is the best answer I can make to the first remark of Mr. Hawtrey as to the plural of the word. I daresay that I have chosen Mr. Hawtrey's articles as typical of the English attitude towards French policy, because he is considered, on this side of the Channel, as the strongest critic of this policy and one of the best champions of British economic thought. As a proof of it, I shall only quote a sentence of Professor Charles Rist in the foreword to the new translation of Currency and Credit : " Mr. Hawtrey has probably influenced British monetary policy in a decisive way." But that is only a formal matter. Let us come to the substance of my paper and to the objections it has raised. To make this answer as clear as possible, I shall consider, among Mr. Hawtrey's remarks, only those which are most essential towards my thesis.

The first point is concerned with Mr. Hawtrey's explanation of the movements of gold. Here I think I shall entirely agree with the distinguished economist. That he does not limit the causality to the price level, as Ricardo does, but extends it to consumers' income and outlay, makes his theory more precise and valuable, but along the same, shall I say, mechanistic line as Ricardo's. That, in theory, Mr. Hawtrey is inclined to recognize the importance of psychological causes, I do not deny, but, as he agrees, the passages of his work he has quoted do not concern French policy. I therefore simply regret that he did not give to these factors a sufficient place in that precise case.

I must evidently have misread Mr. Hawtrey when I thought he said a real flight from the currency to be impossible. I read too much in his sentence "There is a flight to the franc just equal to the flight from the franc." That was only, as I now clearly see it, a brilliant way of stating a simple rule of accounting and I have been wrong in thinking that it intended to mean more. Evidently, the flight is only accomplished, except for a very limited local flight of wealth, through the fall in the price of the franc. But the result has been the creation of vast French holdings abroad which have rendered possible the course of post-stabilization events.

Next comes the idea of sterilization. I should answer to Mr. Hawtrey that I entirely agree with his figures concerning French gold reserves; they are more in favour of my thesis than my own figures. I did not take the gold in the Bank of England into account because, though it was earmarked, we had to pay an equal amount in gold values to regain it. I did not speak of French hoarded gold as I wanted to make the best of the argument against French policy. But I shall not follow Mr. Hawtrey to his ultimate conclusion. It seems to me hardly fair to take French reserves in 1931 as a term of comparison. The world crisis broke out in the summer of 1929, and at that time the gold reserves had only increased by some nine billion francs, 30 per cent. of the 1926 total. Moreover, that was only around 550 tons, about one-fourth of the world production in that lapse of time, and not even 3 per cent. of the world monetary stock in that year. As to the further increase in following years, I persist in thinking that it is an effect of the world crisis and of wrong foreign policies.

But let us come to the central point of my paper. If I have been particularly concerned with Mr. Hawtrey's argument that the absorption of gold was due to the insufficiency of the note circulation at the level existing in December, 1925, it is because his whole thesis rests on that argument and because it falls away altogether if the argument can be proved to be wrong. I feel that Mr. Hawtrey will agree with me that, if he did not overlook the increase of payments by cheque, he has not supported with adequate proof his conclusion that it was negligible. And here I am afraid he did not follow exactly the line of my thought. I did not *drop* my theory at this point. I used a way of arguing which I still regard as perfectly correct, and which is simply an "*a fortiori* argument": that increase in cheque payments is a fact, but, *even if that had not happened*, Mr. Hawtrey's theory would still not be right.

Why should I be ashamed to state that money and bank credit are not identical and, at the same time, that the velocity of circulation of both might vary in roughly similar proportions? The difference consists in the fact that bank credit must be *repaid* at a certain time and that money must not. But, in the meantime, both circulate in the same way and are used for similar payments. I am at a loss to find a logical contradiction in these two judgments, and Mr. Hawtrey's criticism would be valuable only if there was a contradiction. Hence I still feel that, since bank credit and money are used for the same purpose, it is possible to admit that their velocities of circulation, so long as they circulate, vary in the same way. Furthermore, I am afraid that the assumption which Mr. Hawtrey makes, that the "virements at the Bank of France" must be taken into account, is much more dubious than my own assumption. If he remembers M. Rueff's point in the quoted book, he might observe that the author, who knows much about the French banking system, admits that the virements *mostly* correspond to those transactions in a financial centre which Mr. Hawtrey wishes to eliminate, and that the bank clearings are *mostly* commercial. I therefore feel that Mr. Hawtrey's criticism on that point holds good against his own figures, but hardly against mine.

As to the precision of my calculation, I first would state that, to say that it is *also* erroneous, means that, to a certain extent, it falls, as we say in France, "into the same bag" as Mr. Hawtrey's estimate. But only to a certain extent. I am afraid the English translation has slightly changed my meaning. I took the word erroneous as meaning "involving a certain amount of error" in the scientific use of the word. And what I felt exactly was that, though not being absolutely adequate to the fact it had to measure, it was still much more adequate than Mr. Hawtrey's figures. If my theory is not quite exact, it is because, up to that point, it left on one side the question of hoarding of banknotes. I should agree with Mr. Hawtrey that a certain kind of hoarding can hardly be distinguished from a slowing down of the velocity of circulation, and I should say that it is especially true of the kind of hoarding which expresses itself in an increase in bank deposits. But I am afraid that what Mr. Hawtrey calls "primitive hoarding" has really taken place and has really been overwhelming.

I do not see why the increase in bank deposits (and to the Sociétés de Crédit, Mr. Hawtrey should have added the other banks) should be incompatible with the hoarding of nôtes. On the one hand it mainly balanced an increase in bank credit, which rendered at the same time a certain amount of notes useless, in consequence of the increase in cheque payments. On the other hand, if people made cash deposits, the notes involved went back to the Bank and came out of the circulation. On the whole, the fact that hoarding took place simply means that the redundancy of notes in circulation allowed it. I see very well that Mr. Hawtrey would be inclined to minimize such hoarding, but I am afraid he will not be able otherwise to explain the enormous relative increase of "grosses coupures" after the stabilization. Until an explanation of the fact is given, which will sound more likely than this one, I shall maintain my position.

I feel that my way of estimating hoarding (which is not my way, but that of the Bank of France; see Pierre Strohl, in *Revue Politique et Parlementaire*, Dec., 1935) is quite adapted to a comparison between 1913 and the stabilization period. It rests upon the increase in the relative proportion of "grosses coupures." The percentage existing in 1913 was adapted to the amount of payments and to the small amount of hoarding at that time. The enormous increase of these "grosses coupures" meant an increase in requirements for hoarding. Furthermore, if Mr. Hawtrey would admit that some currency was hoarded in 1913, it would affect his own calculation of the needed currency in 1926, unless he would admit at the same time that the proportion of hoarding is a constant, which seems to me a gratuitous hypothesis. However, I wonder whether he did not make that hypothesis. Otherwise, I should be unable to understand how, after having said that it is impossible to make any reliable estimate of hoarding, he is able to state that the estimate of currency requirements must *include* requirements for hoarding. If he does not postulate that the requirements for hoarding have remained proportionally the same from 1913 up to the stabilization, how can he say that the circulation in 1926 ought to be so many times that of 1913, including an amount for hoarding which he has just proclaimed he is unable to calculate? Hence he cannot prove, *a priori*, as he wishes to do, that the increase in the note circulation was badly needed by the French market. Our difference of opinion would come on the purely positive question: in fact the circulation increased and notes were hoarded. How can these facts be explained? Here I think my thesis to be clear and quite opposite to Mr. Hawtrey's.

On the next point I am glad to agree with Mr. Hawtrey that the word "securities" (p. 292) was a rather unhappy one. As a matter of fact it is a wrong translation, which I failed to correct, of the word "devises." However I feel that Mr. Hawtrey, though speaking of a confusion of thought, has perfectly understood that it was only a confusion of terms. I am still of the opinion that, unless it was desired to allow the franc to increase in value, it was necessary to create new francs to buy the offered foreign exchange. As to the redundancy of these notes, I agree entirely with Mr. Hawtrey, except in his last point. I should say that the redundancy brought two effects: one part of the redundant notes were hoarded, the other went back to the Bank through two sorts of channels—private deposits and public deposits. As for the gold, it was not exported, because French capital was repatriated and foreign capital poured into France in such a way that an export of gold was altogether impossible. Once again, I think that Mr. Hawtrey is wrong in neglecting or, if he prefers, in underestimating psychological factors: only if his own theory were true, would it be true that, unless the additional circulation were required, a contraction would occur and the gold would be released. But I cannot follow him in that field. I never said that his theory was contrary to his assumptions. I simply said that his assumptions appeared to me to be contrary to the facts.

In saying that gold could not be used except as an excessive backing to an excessive note issue, did I really surrender to Mr. Hawtrey? I do not agree. His conclusion is too hasty. It is exactly as if he were to say "Mr. Schwob agrees that the mercury comes up in the tube of Torricelli, hence he must agree that nature abominates a vacuum." And here we come back to the exact object of my paper: it is beyond question that both the note circulation and the gold reserves increased; Mr. Hawtrey states that this is because an increase of circulation was needed, and gives, if I understand his thought correctly, the following sequence of events: need for an increase of circulation, increase of circulation, increase of gold reserves. I, on the contrary, would say: inflow of capital, increase of foreign exchange and gold reserves, increase of note circulation. The mercury did not come up in the tube because nature abominates a vacuum, but because some external pressure has pushed it from outside. As to my supposed renunciation of my argument concerning the velocity of circulation when I introduce the explanation by hoarding, I do not see how Mr. Hawtrey comes to that conclusion: it was because the velocity of circulation had increased that the notes were not needed for payments and were hoarded. I do not see that the hoarding of some notes be incompatible with an increase of the velocity of circulation for the notes which are kept in circulation.

I may have expressed myself too strongly on Mr. Hawtrey's point concerning the gold inflow into France. I did not in any way interpret it as an imputation against France (though I think Mr. Hawtrey's words appeared to imply some blame), but as an imputation, to my mind much more serious, against the historical and economic truth, and I have tried to prove that it was really so.

I have very well understood that Mr. Hawtrey argued that the French monetary policy did not have in 1927 a deflationary effect on the world market. But I insist that I cannot agree when he speaks of an internal "deflationary policy." Notes were poured into circulation and, as soon as they were issued, they came back to the Bank. The holders of these notes did not find any economic use for them. They therefore bought Treasury Bills and the notes were deposited by the State to its account at the Bank. It is remarkable that, during the whole period, the former legal maximum of circulation has never been exceeded. But it happened that the maximum of Treasury Bills was soon attained; from that time on, the private banks, which were overburdened with liquid assets, asked for the possibility of exporting capital. And here comes the question of forward purchase of foreign exchange. I am very pleased to agree with Mr. Hawtrey on an error of date. He is right in stating that such operations began in June, 1927. Though export of capital was still forbidden, special permits were given to the Banks and, except for the mistake as regards date, the mechanism remains exactly as I have described it. It may be that Mr. Hawtrey's words are correct and that it was a way of satisfying the demand for francs in exchange for foreign currencies, but without adding to the immediate supply of francs. Would it not have been absurd to add to a supply which was already redundant to such a point that nearly every new created note went back to the Bank vaults and did not find any economical use inside the boundaries? I think that one is much more close to the truth in saying that it was a way of getting rid of excess francs, which could not be used in the internal activity.

Mr. Hawtrey denies any regret that the rate of 100 was not chosen. Perhaps the word was too strong, and indeed I must have read more into Mr. Hawtrey's remark than he really implied. However, I feel that, while there may have been *something* to be said for that rate, the strain which Mr. Hawtrey admits to have been put on the mercantile world by the rise from 200 to 120 reduces that *something* to *not much*, especially for someone who keeps in mind the effects of the English re-valuation in 1925. There was something to be said for a rate of 100 to the £, but not a very large nor a very convincing something.

Furthermore, I am afraid that Mr. Hawtrey did not understand what I meant by a "falling world price level." I do not deny that a few fluctuations have taken place in these prices, and that since 1926 they may have risen for short periods, but, on the whole, the tendency was a weak one. And I feel that experience has proved that, including a margin of 14 per cent. in his calculation, Mr. Hawtrey did not realize the magnitude of the fall which that long-trend downwards tendency would cause. But I should agree that it is easy to take advantage of it at the present day and that no one could have forecast such a fall. In any case, prices have fallen and we may be happy that the rate of 100 was not chosen at the time.

On the whole, I am afraid Mr. Hawtrey's thesis is much more distant from mine than he himself thinks. I feel that our whole attitude towards monetary economics and perhaps towards economics in general is involved in the controversy. At any rate, once again I must thank him for his courteous objections and apologize for not having been convinced by them.

The British Exchange Equalisation Fund in 1935

By F. W. Paish

As this note is merely an addition to my article of a year ago (Economica, February, 1935, pp. 61–74), I shall not repeat my description of the method used in estimating movements of the non-sterling assets of the British Exchange Equalisation Account (or, as it is more frequently termed, Equalisation Fund). It is, however, necessary to remind readers that this estimate is largely based on two assumptions, both of which are very uncertain, so that the final estimates can at best represent only a very rough approximation to the truth.

The first of these assumptions is that the Exchange Equalisation Fund keeps the whole of its sterling assets in the form of Treasury Bills obtained direct from the Treasury through the " tap." If the Fund were to buy or sell bills in the market, or obtain them by tender, or were to hold other types of sterling assets, the calculations would be to that extent erroneous. To tender for or buy large quantities of bills, or to hold long-dated sterling securities, would probably prove inconvenient in practice. There are, however, two other types of sterling assets which the Fund conveniently might, and probably does, hold in moderate quantities from time to time—Deposits with the Bank of England, and Ways and Means Advances to the Treasury. Since, however, the total of these owned by all government departments is small as compared with the total of Treasury Bills, any large and continued use by the Fund of these outlets for its sterling assets would leave evidence in the published figures that something unusual had occurred. In practice, the use of these methods probably tends in general rather to delay than to conceal the effects on the bill figures of changes in the total of the Fund's sterling assets, though the effects of quite temporary changes might be concealed altogether.

There are of course other methods by which the Fund might conceal its operations still more effectively—as, for instance, by holding the fluctuating margin of its sterling assets on deposit with the joint stock banks. There is no evidence that such methods are in fact used.

The second assumption is perhaps even more doubtful. This is that the volume of " tap " bills held by other government departments and the Bank of England remains approximately constant at the level which existed before the inauguration of the Exchange Fund. Fluctuations in the "tap" bill total during 1931 were mainly of the order of £10–20 Mn., and of quite short duration, so that, if movements many times this size occur over periods of several months, there is some ground for the presumption that they occur mainly in the bills held by the Fund and not in those held by other departments. On the other hand, a slow long-period rise or fall in these other holdings is by no means impossible, and as the time since the inauguration of the Fund lengthens, the possibility that such a change has taken place increases. The estimates recorded on the Chart are therefore likely to be less unreliable as an indication of movements over a single year than as a clue to the absolute position of the Fund on any given date.

It was stated last year that the best argument in support of the value of these estimates was that, on the whole, they had hitherto corresponded remarkably closely, both with the impressions recorded by the foreign exchange market of the day to day dealings of the Fund, and with the movements of sterling exchange rates. Subject to correction on one or two occasions for the probability that a part of the Fund's sterling assets was temporarily being held at the Bank of England or in Ways and Means Advances, the same statement holds good for 1935.

In reviewing the course of events in 1935 the most remarkable feature is that the exchange value of sterling, which during the previous three years had been falling at an average rate of about 10% per annum, was not only maintained over the year as a whole, but, apart from one short period of weakness, fluctuated very little. In fact, sterling is still at the level reached in September, 1934, while for the last seven months of 1935 the fluctuations in the sterling-franc rate have been hardly greater than might have been expected if the pound had been on the gold standard at a franc parity of about 74¾.

The year opened with the pound firm at about 74½ frs. During January and the first half of February the Fund seems to have been able to replenish its depleted non-sterling resources to some extent, though the gain of nearly 3 Md. frs., shown on the Chart may, like the loss during November and December of the previous year, be an over-estimate. About the middle of February, the trend was sharply reversed, and by March 7th sterling had weakened to about 71 frs. In checking this movement the Exchange Fund seems to have sold some 3 Md. frs. of its non-sterling assets. These sales are reflected in the Chart with a time-lag of three or four weeks, which may have been due to the temporary investment of the sterling proceeds in Ways and Means Advances. If movements in these are included, the lag is reduced to about a week.

The weakness in sterling was short-lived, and in the second week of March a marked recovery set in, due principally to uncertainties regarding the ability of the gold bloc countries to avoid devaluation. The first exchange crisis, which culminated in the devaluation of the Belga on April 1st, was followed by a Dutch exchange crisis in April, a French exchange crisis in May and June and a second Dutch crisis in July. The franc value of sterling had risen to nearly 75 by the end of May, and remained steady near that level until the end of August. During the whole of this period the Exchange Fund seems to have been obliged to sell sterling at frequent intervals in order to moderate and check the rise in the pound, and, according to the estimates represented in the Chart, by the end of August the Fund had not only replaced the 3 Md. frs. of non-sterling assets sold in February-March, but had purchased some 3 Md. in addition, bringing the estimated total of non-sterling assets in its own possession to over 9 Md.

At the end of August this period of strength came to an end and was succeeded by a second short period of weakness, apparently due partly to the seasonal commercial demand for dollars, and partly to sales of sterling by purchasers of United States securities. During September and the first half of October the Fund was reported to be selling francs on a substantial scale, thereby preventing the franc value of sterling from falling below about 74.40. The francs thus sold were said to be obtained by sales of gold to the Bank of France, and the natural result of selling these francs to offset excess purchases of dollars was to force the franc-dollar exchange rate to gold export point, and to cause more or less corresponding quantities of gold to be withdrawn from the Bank of France for shipment to America. By comparing the changes in the gold holdings of the Bank of France with the amounts exported, certain observers[1] were enabled to make estimates of the amounts of gold sold by the Exchange Fund. These estimates are in the neighbourhood of £35 to £40 Mn., or, say, 2½ to 3 Md. frs.

No sign of these sales appears in the Treasury Bill figures, but at least a partial solution of the problem of where the sterling proceeds were invested seems to be found in the unusual rise at this time of Government Deposits at the Bank of England, which for no other particular reason rose from about £6 Mn. on September 4th to £36 Mn. on October 9th. These deposits remained at about this figure until October 23rd, when they began to fall, reaching £21 Mn. on November 6th and £7 Mn. on December 9th. It therefore seems probable that a substantial part of the sterling proceeds of the Fund's sale of francs was held temporarily as a deposit at the Bank of England.

It is probable that the effect of this augmentation of the Fund's sterling assets would sooner or later have been shown in the Bill figures if it had not been that about the middle of October the exchange trend was again reversed. A new exchange crisis arose in France, and though the principal movement was into dollars it seems probable that during November the Fund was again checking a rise in the pound by re-selling the sterling it had so recently bought. By the middle of December the Fund appears to have restored its non-sterling assets to above their August level. The possible changes in these reserves during September, October and November are indicated on the Chart as an alternative version of Curve A. The year closes with sterling steady at about 74½ frs., and with the non-sterling assets of the Exchange Fund apparently restored to some 10 Md. frs. The amounts sold in 1934 appear thus to have been repurchased, and the prospects for the continued stability of sterling seem to be fairly good.

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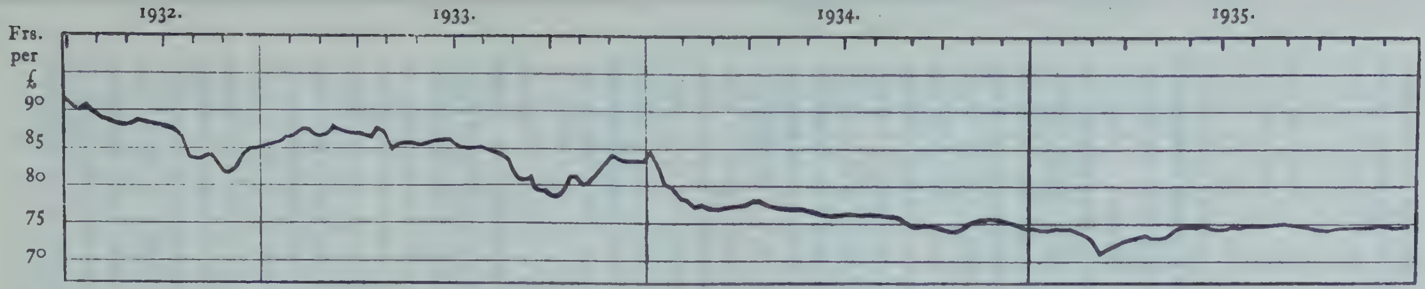
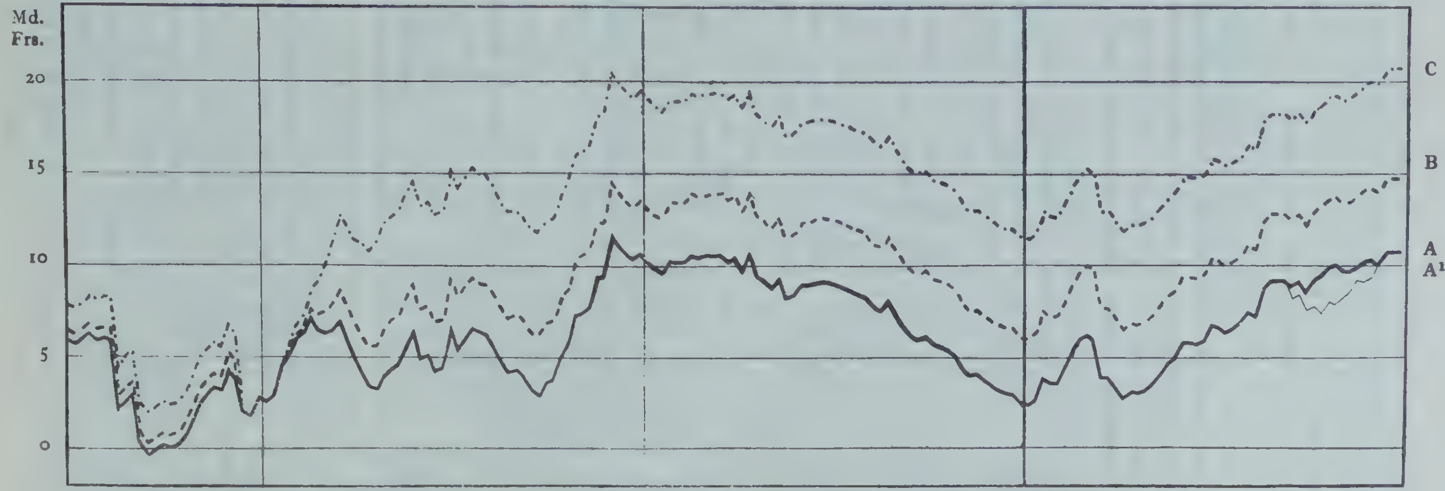
[1] Mr. O. R. Hobson, *News Chronicle*, October 11th, 1935; also Mr. R. J. Truptil, in a privately circulated memorandum.

During the earlier part of the year the Bank of England had bought, presumably from or through the Exchange Fund, small quantities of gold, the total value of its purchases up to the middle of October being about £1½ Mn. From this date onwards its purchases became more considerable. £1 Mn. was bought during the second half of October, £3 Mn. in November and £2½ Mn. in December, bringing the total par value of its gold reserve to over £200 Mn. The effect of these purchases is seen in the Chart in a widening of the intervals between Curves A and B and between B and C. The principal purpose of the gold purchases by the Bank was, no doubt, the strengthening of its note reserve, already depleted by the marked increase in the circulation, against the Christmas demand. It is, however, interesting to observe that, if my interpretation of recent movements is correct, the effect of Exchange Fund operations since August on the internal credit position of the country has been almost identical with that of sales and purchases of gold by an ordinary gold standard central bank. During the period September 4th to October 9th, when it was losing gold, the Fund, by accumulating sterling balances at the Bank of England, reduced bankers' balances at the Bank from £100 Mn. to £75 Mn., with the result that the clearing banks' average ratio of cash to deposits fell in September to little more than 10%, the lowest figure on record. As soon as the tide turned and the Fund began to acquire gold, it permitted the expansion and maintenance of bankers' balances at the Bank by releasing its own balances there and by selling gold to the Bank. Its operations thus resulted in a curtailment of the banks' cash reserves during the period of gold losses and in their expansion when gold was being gained. If this conclusion is associated with the remarkable stability of sterling exchange rates during recent months, it is difficult to avoid the impression that, consciously or unconsciously, a new technique of *de facto* currency stabilisation is now in process of evolution.

EXCHANGE EQUALISATION FUND. TABLES.

Date	Non-sterling assets in actual possession of Fund A Md. frs.	A¹ Md. frs.	Total non-sterling assets of Fund B Md. frs.	Total including gold sold to Bank C Md. frs.	Franc-sterling Exchange Rate Frs. to £
1935					
January ..	2·46		6·07	11·44	74·5
	2·76		6·39	11·74	74·3
	3·95		7·58	12·93	74·3
	3·65		7·26	12·63	74·5
February ..	3·65		7·27	12·63	74·4
	4·54		8·16	13·52	74·4
	5·43		9·08	14·41	74·0
	6·02		9·69	15·00	73·7
March	6·29		10·03	15·36	73·0
	5·93		9·80	15·00	71·3
	3·92		7·74	12·99	71·9
	3·92		7·71	12·99	72·3
	3·34		7·09	12·41	72·8
April	2·83		6·56	11·90	73·1
	3·20		6·92	12·27	73·3
	3·13		6·82	12·20	73·6
	3·28		7·01	12·35	73·2
May	3·65		7·38	12·72	73·2
	4·16		7·87	13·23	73·5
	4·68		8·33	13·75	74·2
	5·05		8·66	14·12	74·8
	5·80		9·41	14·87	74·8
June	5·80		9·42	14·87	74·7
	5·73		9·34	14·80	74·8
	5·95		9·57	15·02	74·6
	6·77		10·40	15·84	74·5
July	6·70		10·33	15·77	74·6
	6·40		10·00	15·47	74·9
	6·62		10·24	15·69	74·7
	6·92		10·52	15·99	74·9
August.. ..	7·52		11·12	16·59	74·9
	7·30		10·90	16·37	74·9
	8·80		12·40	17·87	75·0
	9·25		12·84	18·32	75·1
	9·25		12·84	18·32	75·1
September ..	9·25		12·84	18·32	75·0
	8·95	8·20	12·55	18·02	74·9
	9·25	8·43	12·86	18·32	74·8
	8·60	7·55	12·26	17·79	74·6
October ..	9·27	7·77	12·95	18·46	74·4
	9·64	7·39	13·33	18·83	74·4
	10·02	8·07	13·69	19·21	74·5
	10·09	7·92	13·76	19·28	74·6
November ..	9·74	8·24	13·46	19·06	74·6
	9·75	8·62	13·53	19·19	74·7
	10·00	9·25	13·82	19·57	74·7
	10·37	9·17	14·18	19·94	74·8
	10·39	9·34	14·25	20·09	74·9
December ..	10·11	10·03	14·03	19·94	74·8
	10·81		14·79	20·76	74·6
	10·81		14·79	20·76	74·6





UPPER CHART.
Franc Sterling Exchange in francs per £.

LOWER CHART.

A. *Heavy solid line.* Estimated non-sterling assets in actual possession of Fund.

A¹. *Thin solid line.* Ditto, alternative estimate September–December, 1935, allowing for fluctuations in Government Deposits at Bank of England.

B. *Broken line.* Estimated total non-sterling assets of Fund, including contingent interest in gold sold to Bank of England.

C. *Broken and dotted line.* Estimated non-sterling assets in actual possession of Fund, plus gold re-sold to Bank of England.

Book Reviews

Industrial Germany. A Study of its Monopoly Organizations and their Control by the State. By HERMANN LEVY. Cambridge University Press. 1935. xi + 245 pp. 12s. 6d.

The conspicuous contrast between the early development of industrial combinations in Germany and their slow progress in England has long since attracted the universal attention in both countries. The presumed need of industrial reorganization in England, on a line vaguely indicated by "rationalization," "co-ordination" and such-like phrases, has done much to intensify the interest in this matter during the last decade. As a consequence of this, there has sprung up in England a whole literature which reflects not only the growing interest in the forms and problems of monopoly organizations but also the changing attitude towards this phenomenon. A careful observer cannot fail to notice that this literature is emanating an atmosphere which contains less and less of the anti-monopolistic ardour of former days, while the odour of the various forms of pro-monopolistic ideologies—so familiar from the German literature—grows stronger and stronger. Recent developments in economic theory have contributed considerably to this narcotic odour which enables our busy economic surgeons to operate on the equilibrating organs of our economic system without being hindered too much by painful groanings of the patient.

It must be said at once that Dr. Levy's book has this odour in a considerable dose, though from time to time he makes gallant efforts to let in fresh air, by making it clear that there is an ideological and phraseological veil drawn over the brutal nakedness of monopolistic interests being in conflict with the interests of the community at large.

Dr. Levy makes an interesting start by raising a question which every student in this field will find a very appropriate one. He asks why the strong resentment of monopolies which public opinion in England has always shown until quite recently has been very rare in Germany during the last centuries. The lack of any anti-monopolistic ardour in the make-up of the German mind is, indeed, a very curious and extremely significant fact which, if properly interpreted, sheds much light on the difference between German and English mentality. Except a sprinkling of Liberals, no group in Germany has ever shown what even remotely resembles the fighting spirit of the advocates of free competition in England and, incidentally, also in the United States. From time to time perhaps the Socialists made some effort but, trained as they were in the worship of bigness and organization and in welcoming any kind of capitalistic co-ordination as a step nearer to the Socialist State, they were always apt to accept cartellization as something more advanced and nearer to their ideal. The effect of this propitious atmosphere on the development of industrial combinations in Germany can hardly be overrated. Not only were the monopolistic organizations in Germany less hampered than in other countries by regards to public feelings, but also law and jurisdiction in Germany were favouring rather than impeding monopolies. Equally important was the fact that in this atmosphere any resistance to measures fostering monopolies (*e.g.* tariffs) must of necessity be just as weak as the enthusiasm for opposite measures which make the position of monopolies uncomfortable. I believe this atmosphere to be much deeper rooted than Dr. Levy leads us to assume. He points out that in the earliest days of industrialism monopolies were so bad in England that the English people has had enough of it once and for all, while in Germany they were " far more guided by the aims of paternal government " (p. 6). This explanation does not convince from any point of view, but it is useful though in a sense which is absolutely different from that conveyed by the author. What matters is not whether monopolies in Germany have really been less malignant than in England or the government really more paternal, but the staunch *belief* that they were and the state of mind indicated by such a pious belief. It is a state of mind characterized by a timid docility in all public affairs, the ready acceptance of everything which has the sanctity of merely existing (glorified by Hegel), a certain indifference in the moral aspect of public affairs, a long training in organization and administration, a preference for the " intelligible Freiheit " instead of political and economic liberty, the belief in an inexorable fate in historical development (preached by Hegel and made use of later on both by Marxism and its twin brother Fascism), the habit of bestowing metaphysical value on the State and the institutions sanctified by it—in short, everything which constitutes Prussianism and which, as every student of this most important phenomenon knows, owes much to the influence of Lutheran Protestantism. Almost the same reasons which explain why Germany has had a Reformation instead of a Revolution like England and France explain also why its attitude towards monopolies has almost always been so weak-boned and officious.[1] A strong cartel was, so to speak, a step nearer to throne and altar. It has always had a distinctly feudal flavour, especially in the heavy industries where the leaders inclined ambitiously towards the landed aristocracy. Monopolies had become institutions of which to speak disrespectfully was almost as indecent and ungentlemanly as tooth-picking in public. To disregard these very complicated sociological and spiritual connections is to miss the most important point, not only for the explanation of the pro-monopolistic ideology in Germany but also for a better understanding of what may be called the political and economic mentality in this country. And that it is so rare to hear a German speak frankly and without subterfuge about these matters is not the least significant symptom of this mentality. It is obvious, however, that an analysis of this mentality is the more necessary since it is spreading its influence all over the world.

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[1] The Liberal era, from 1818 to 1879, is in a certain sense an exception, into the reasons of which we cannot enter here.

This lengthy explanation was necessary in order to give a general idea of Dr. Levy's book. It truly reflects the prevalent German attitude which the author has recognized as something in need of an explanation without having gone deeply enough into its psychoanalysis. Almost every page betrays his conviction that the monopolistic organization of the German industry is something superior, something in accordance with the inner trend of development and with the teachings of the more advanced economists, while the belief in the benefits of free competition is evidently considered as old-fashioned and quixotic, if not "fanatical" (p. 7). He is in no sympathy with men like Wolfers who think that a policy of preventing monopolies ought to replace a policy of monopoly control. According to him, monopolies have come to stay, not as an unavoidable evil but as an "organization of industry based upon principles of common action and associative agreement" (p. 226). In reading the book one is hardly aware that monopoly organization has its drawbacks or that it might even be subject to abuses. In the whole book there is only a single sentence where Dumping is alluded to as something being "frequently practised" (p. 221) by the iron and steel industries. There is no allusion at all to the possible damage done to national welfare by a distortion of the distributional process or by misdirection of productive forces. The reader is left with the impression that the leaders of the German monopolistic organizations are more often than not public-spirited men in contrast to the ruthless leaders of the American trusts, but he is told nothing of the scandalous cases of recent years which have done much to strengthen anti-monopolistic sentiments even in Germany during the last decade. While he deals at some length with the danger of over-production and excess capacity brought about by industrial combinations, he is not even here quite impartial or complete in his analysis. In using the German potash industry as an example, he does not make quite clear that this has really been the most outstanding and the most expensive case in economic history of the waste and disorder of monopoly, in contrast to the *vis medicatrix naturæ* of competition. Nor does he mention that the German potash industry is at the same time a very striking example of the fact that the natural forces, if left alone, are working in the direction of competition rather than of monopoly. Without state interference a very wholesome competition among the potash works would have established itself at an early date, and thus the appalling waste of the later overproduction would have been avoided, to say nothing of cheaper fertilizers for the farmers and of the saving of the tax burdens on the mushroom communities around the numberless shafts which had to be abandoned later. The account given by Dr. Levy of this interesting story conveys the impression that it was not so much monopoly as such which had to be blamed but the peculiar form of the cartel in contrast to the concentration of undertakings. In order to correct this misleading impression, he ought at least to have mentioned that monopoly in the form of trusts and concerns is suffering from the same tendency towards overcapacity because these undertakings are known to be easily tempted to excessive investments of their profits in their own plants, a tendency which could have been illustrated by the notorious example of the German cement industry.

While Dr. Levy fails to give a proper balance of the merits and demerits of monopolies he strongly believes in their "organic" origin. In his opinion, "there can be no doubt that industrial combination represents to-day a development which has grown up in an organic way out of economic conditions not less 'natural' than were those of free competition" (p. 231). Despite the painstaking endeavours of the author to prove this view, I challenge it in the most uncompromising manner. The more the opposite is being asserted, the more forcefully it must be stated that it is absolutely untrue that Competitive Capitalism is of necessity developing into Monopolistic Capitalism. On the contrary, the truth is that there is everywhere a natural gravitation towards competition rather than towards monopoly, and this gravitation is commonly so strong that very rarely, indeed, a monopoly has come into life or remained alive for long without more or less violent engineering on the part of the State. Even when the natural tendency towards monopoly has the appearance of being particularly strong, as in the case of the iron and steel industry or the coal mining industry in Germany, the government had to do its utmost in order to bring about a monopolistic combination. It is doubtful whether there would be many monopolies in the world if the State, in order to offset the natural gravitation towards competition, had not thrown into the balance the full weight of its authority, of its jurisdiction and of its general economic policy fostering the formation of monopolies. And still less would be left if the State would reverse its economic policy so as to lend support to the natural gravitation towards competition instead of working against it. But the belief to the contrary, wrong as it seems, is very useful for creating the right atmosphere in which monopolism is blossoming. So is the ideological predilection for the Monumental, the Big Scale, and for economic organization and regimentation and the host of the economic catch-phrases of our age like "orderly marketing", "wasteful competition", "rugged individualism", "Corporativism" and so forth. That is what makes this variety of the Hegelian belief in inexorable fate so extremely dangerous.

It goes without saying that the foregoing is a very approximate statement of the case and that many refinements and modifications are necessary, especially with regard to all enterprises of the public utility type (in the wider sense of enterprises with an unusually large proportion of fixed capital). It is equally a matter of course that there is no perfect correlation between tariffs and monopoly, but in easily refuting such a view Dr. Levy proves again too much. It would be difficult for him to deny that, in the absence of a transport monopoly, of a natural monopoly, of a legal monopoly (bestowed by the State in the form of patent rights), or of a good-will monopoly (*e.g.* for Aspirin), a tariff will be a necessary, though surely not the sufficient, condition—if we leave aside for the moment the complications arising from international monopolies. One has only to ask oneself what would have become of the iron and steel monopolies in Germany without protection. As a matter of fact, it is absolutely impossible to understand the monopoly movement in Germany without the Bismarck Tariff of 1879, a connection which Dr. Levy leaves unmentioned throughout the book. Here Dr. Levy misses another very important point. For a tariff may hinder the formation of a really monopolistic combination while it leaves open the way for cost reducing combinations so that a liberal commercial policy may exert a very beneficent influence on the way in which combinations endeavour to enhance their profits. It would be an error to assume, as Dr. Levy does, that cost reducing combinations are an infringement on the competitive system. Consequently, they must be clearly distinguished from monopolistic combinations which try to raise their profits by the control of the market. This distinction is surely very important for the guidance of the State policy towards combinations.

It is really regrettable that Dr. Levy's book shows so little of the disillusions with which even those who have no innate aversion to monopoly must look back to-day on the long series of experiences in Germany, and that he has made so little use of the opportunity to present in its true significance for the general trend of our economic system the phase which, somewhat ahead of many other countries, the development in Germany has reached. While his book gives a fairly good picture of the more officious attitude still prevailing in Germany, the reader would be wrong to assume that there are no people in Germany who have drawn quite different conclusions, challenging the whole ideology which has served so well hitherto the purposes of industrial monopolism. Besides the various writings of A. Wolfers, to which also Dr. Levy refers on several occasions, F. Böhm's *Wettbewerb und Monopolkampf*, though not cited at all by

Dr. Levy, must be mentioned as one of the really outstanding books of this kind in Germany. So one may say that there has at last sprung up in Germany a school of thought which is not afraid to face squarely the issue between competition and monopoly anew and, on the strength of the uncommonly rich store of German experience and of a deeper theoretical insight, to make it clear that after all nothing better has yet been found to replace competition as a means for forcing the *entrepreneurs* to a fair *quid pro quo* (" Leistungsprinzip ") and to the relatively best administration of the social productive forces entrusted to them.

All this has been said in order to give the right perspective to the readers of Dr. Levy's book and to tell them in advance what they are not to expect from it. It is only fair to add in what respects their expectations will not be disappointed and to say that it is a book which as a source of information on all questions of a more technical kind and as a well-written inventory of industrial combinations in Germany deserves a high place.

WILHELM RÖPKE.

The Economics of Stationary States. By A. C. PIGOU. Macmillan. 1935. xi + 326 pp. 12s. 6d.

In the real world, " the number of people, their age distribution, their tastes, their stock of equipment, and, last but not least, their endowment of scientific and technical knowledge are constantly changing." Adjustments to new conditions are far from complete before the conditions change again. Hence equilibrium is never reached, and the economic system tends first towards one equilibrium and then towards a different one. Probably few people regret this ; the spirit of the age demands economic progress and equilibrium implies economic stagnation. But this incessant flux greatly complicates economic analysis. It is much easier to display the working of economic forces in a hypothetical stationary State, where all such changes are ruled out, than in the complex world of reality. And to do this is a very useful first stage towards explaining the reality.

In this volume, Professor Pigou removes the many-coloured dome of glass in order to display clearly the white radiance of eternity which it obscures ; and anyone who inspects it under his guidance will find the insight so obtained a great help in understanding the kaleidoscopic scene around him. The colours change, but the white radiance which underlies them remains a fundamental part of the vision as a whole. The economic forces whose operations can be studied clearly in a stationary State are at work also in the dynamic States in which we live.

Professor Pigou examines in turn a Crusoe economy, an exchange economy in which each person is an independent producer unaided by any factors except free goods, an economy where different factors co-operate in producing but there is only one product, and finally an economy with co-operating factors and many products. The analysis of the Crusoe economy includes a discussion of Crusoe's supply of work and of its distribution among different uses, showing the responses he might make to changes in his tastes or productivity. It includes also a brief but adequate proof that there may be a rate of interest in a stationary State. The analysis of an exchange economy includes a discussion of monopoly in its various forms. The analysis of a one-commodity community includes some discussion of the productivity function, of the theory of costs, and of the remuneration of the several factors. The final analysis shows in what respects the previous conclusions must be modified when there are many commodities.

Excellent use is made of the method sometimes termed Comparative Statics. "Thus, if we imagine ourselves starting from one stationary State, into which some new element is introduced, a comparison between this stationary State and the new stationary State, that would eventually result if and when full adjustment had been made to the change, falls within our purview." But he says nothing of the transition from one equilibrium to another; all "short period problems," notably those arising from Money and from the Trade Cycle, are excluded.

The book is written, apart from the charming introductory chapter, in the austere style of one who regards English as an imperfect substitute for mathematics. The consequences of "given data" (may I insert a parenthetic protest against this now familiar redundancy?) are exposed with remorseless logic. There are no diagrams, although occasionally the language of diagrams is used. There are fourteen mathematical appendices which restate in symbols the arguments given, or supply the proof of statements made, in the text.

Professor Pigou speaks of desires and aversions (and of their elasticities) whilst conceding that it is "inconceivable" that they themselves can ever be measured. "Nevertheless," he says, "I am loath to let them go. . . . Anyone who wishes to do so can easily translate what is said into the language of objective preference scales." Had he adopted the latter course, I doubt whether he could have maintained (in Chapter XLII) that a public monopolist, controlling, say, a municipal tramway, "will aim at maximising the money value of his purchasers' total consumers' surplus minus the money cost of production." Moreover the latter course might have simplified his task. Take, for example, his statement (p. 45) that if Robinson is producing only a single sort of commodity an improvement in his productivity *must* lead him to secure more product. This is of importance, for it corresponds to the statement that if a man's hourly rate of pay is increased he will not reduce his working time so much that he earns less than before. But, says Professor Pigou, to prove this by purely verbal argument is not easy; and no verbal proof is offered. But suppose we think of Robinson as dividing his twenty-four hours a day between work and leisure. If, with an increase in his productivity, he reduces his working hours so much that he obtains the same quantity of product as before, the marginal significance to him of leisure will be reduced relatively to that of product. But, by then increasing his working time again, at the cost of his leisure time, he could obtain more additional product than before per additional minute. Therefore he would do so. The proof is thus comparatively simple.

One difficult question is how to classify factors of production. Professor Pigou accepts the customary division into the three broad groups of Land, Labour, and Capital. In my view, this threefold division is useless, if not misleading. The supply of Land is supposed to be fixed. But it is only the area of land surface and the quantity of matter in the world which are more or less fixed. The supply of land for any particular purpose is fairly elastic whilst the " supply " of land as a whole, in the relevant sense of its productivity, can readily be increased. Professor Pigou himself mentions " capital embodied in land in the form of drainage and so on," and ingeniously suggests that the population of a stationary State can be conceived to keep its capital intact by replacing consumed natural resources by equivalent man-made substitutes. Space is of course important, but only as affecting transport costs, and these do not vary directly with space.

Professor Pigou concedes that under each of the three heads, Land, Labour and Capital, there are innumerable sub-groups and that " for some purposes the distinction between particular sub-groups in a given main group is more important than the distinction between the main groups themselves." Even so, there are difficulties. " The stock of labour is, so to speak, three-dimensional. Its magnitude depends partly on the length of hours per day for which the representative worker works, partly on the capacity of—the amount of work stored in—the representative worker, and partly on the number of workers " (p. 163). But how are we to treat the transference of Mr. X from coalmining to building labour ? Are we to say that " the supply of labour " remains the same or are we to say that the supply of building labour has increased (perhaps at the cost of an investment of capital in the training of Mr. X) and the supply of coalmining labour diminished ? This question is relevant to the productivity function, for an increase in the scale of the production of a commodity often implies changes in the tasks performed by workers remaining in the " industry " (as well as by new entrants). Again, how are we to treat the case of, say, a broadcaster who renders exactly the same service whether he is heard by hundreds or by millions of listeners, or the case of an entrepreneur who exerts the same effort whether his decisions relate to pounds or to thousands of pounds ? On these problems Professor Pigou gives us no guidance.

This volume seems to give two points more stress than their practical importance warrants. The first is the distinction between marginal private product and marginal collective product. The former is the addition to the output of its "centre of production" (firm) made by a factor-unit; the latter is the addition it makes to the output of its industry when it is introduced from outside. It is difficult to think of any important ways in which factors employed in one "centre" can increase or diminish the output of other "centres" (p. 121). "External economies" (and "diseconomies") defined in this way—and a wider definition would deprive the terms of significance—seem almost non-existent. The second point is the recent doctrine that when an industry is under monopolistic competition, "centres of production" will be of less than optimum size, since the output of each centre will be too small to secure minimum average cost. Presumably each entrepreneur will have a plant suited to whatever output he finds most profitable: excess capacity in the obvious sense arises, when it is not a short-term phenomenon, from the continuous struggle for quotas within a cartel rather than from the point in question here. Unless larger plants would give a more than proportionate gain in efficiency, taking account of the cost of distributing, as well as of making, the product, there is no loss owing to indivisibility of plant. The only loss arises from the indivisibility of the entrepreneur himself, who obtains a larger income by spreading his activity over a smaller volume of output than he would produce under perfect competition. Provided that there is freedom of entry to the industry, it is difficult to conceive of this loss reaching important dimensions.

The Theory of Capital plays no part in this volume. Of course, it is easy to define "maintaining capital intact" when the State is really stationary. But Chapter XXXVIII deals with "The remunerations of factors of production in two stationary States, under the rule of competition, in one of which the quantity of one factor is larger than in the other" without considering the problem of measurement when the factor in question is capital. Chapters V and VI give a necessarily arbitrary and rather unnecessary definition of real income which involves excluding durable consumers' goods, except houses, from the concept of "capital." And there is a strange paragraph on page 196 in which it is declared that "the cost of moving capital need not involve any cost of physical transport." The example given is as follows: "If A, who has been accustomed to draw annually from B such and such a quantity of cake as interest on a past loan, decides, one year, to lend this cake to B, the cake that is *not* moved represents a transfer of capital." But it does not represent any transfer of capital between places, and it is this which is under discussion.

I hope my tentative criticisms will lead nobody to suppose that this volume is not a first-class piece of analysis. As Doughty said of his great work, " the book is not milk for babes " ; but it is very good meat for advanced students, and it more than maintains the high standard which we have learnt to expect from its distinguished author.

FREDERIC BENHAM.

Employment Research. L. C. MARSH. Oxford University Press. 1935. xi + 344 pp. 10s. 6d.

Mr. Marsh is Director of Social Research in McGill University, and in this volume of Essays he seeks to lay down the rôle of the social investigator and to formulate and explain the programme of research which McGill has undertaken. This book constitutes, therefore, a general introduction to a series of monographs which are, presumably, to be published in the near future. Mr. Marsh's views of the most useful fields for realistic economic research ; of the best technique for that research and of its limitations have been shrewdly thought out and are cogently and felicitously expressed. " Social science research is especially a function of the University, because of all institutions in the community it is the least open to the suspicion of particularist interest " . . . . . " The organisation of research effort does not imply its creation " . . . . . " Research ability involves a combination of qualities which is by no means common." Opinions such as these, combined with Mr. Marsh's belief in localised research and his insistence upon the quantitative method, lead one to hurry forward eagerly to the later chapters in which are embodied the results of some of his own enquiries.

But these chapters are, frankly, disappointing. The material he presents on population, labour and unemployment consists, for the most part, of masses of official statistics, the comments upon which yield little more than does a superficial perusal of the tables themselves. Analysis is lacking. The discussion ends where, for the realistic economist, it should begin. One can only hope that in the subsequent monographs the many interesting queries raised in this volume, only to be dismissed, will be answered. In some places, indeed, Mr. Marsh's work seems oddly at variance with the principles which he himself has laid down. After stressing the value of the quantitative method and emphasising the need for caution in making generalisations, he himself is guilty of such sweeping statements as " everyone is aware that in character and dimensions the problems of technical progress to-day are radically different from those of pre-war years. The popular currency of terms like ' rationalisation,' ' technological unemployment,' even of ' technocracy,' is evidence enough of this." But where is the evidence that present day technical progress is different in kind from that of the nineteenth century ? Surely the popularity of certain catchwords is not sufficient for a scientific worker. And even if it were, there have been many occasions in the past century when the cry that " the machines take away the bread of the worker " was much more insistent than contemporary discussions of " technological unemployment."

These perhaps are venial errors in an introductory volume. Most readers will be grateful for Mr. Marsh's timely re-statement of the function of realistic economics and his insistence that it is only by a rigid refusal to pass judgment on non-measurable factors and by extreme austerity in arriving at, and publishing, conclusions that the worker in this field can claim for himself the status of scientist.

JOHN JEWKES.

French Import Quotas. By F. A. HAIGHT. P. S. King & Son, Ltd. 1935. xi + 131 pp. 7s. 6d.

By his study of the French Import Quotas, F. A. Haight has added a valuable contribution to the history of protectionism and to the analysis of its technique.

There is an unfortunate similarity between the race in armaments and the race in protectionism. As soon as a new weapon of attack is discovered new means of defence are devised.

In 1931 the devaluation of the pound followed by similar steps in many countries suddenly increased the competitive power of numerous countries in the French markets where prices were very high. The fall in world prices aggravated the disequilibrium between French and foreign costs of production. Special surtax on foreign goods coming from countries with depreciated currencies, and quotas were the measures of defence adopted by France.

The " exchange surtaxes " were subsequently abolished in the course of trade negotiations, but the quota system remained in force and was gradually extended from agricultural products to coal and even to manufactured articles.

In point of fact the quota system has become a permanent feature of the French protection system and has now been adopted to some extent in about 25 other countries.

The author has pointed out with great objectivity the special conditions of France at the time of the introduction of the quota system, conditions which might have justified an emergency measure of temporary character.

His thorough study of the various types of quotas devised, of the abuses and speculation which are inseparable from their practical application, as well as his efforts to ascertain their practical effects will comfort liberals and give food for thought to the advocates of " autarchy ".

Mr. Haight makes it quite clear that one of the reasons for the adoption of quotas in France was the hope of securing a temporary protection to the French market pending a rise in world prices which would correct the French economic disequilibrium and make deflation unnecessary.

This French hope having been frustrated, and deflation having proved insufficient to solve the French economical and financial problem, there seems to be no hope of seeing France give up the quotas other than as part of a bargain to secure an international monetary agreement—or, failing that, after an " alignment " of the franc with the leading world currencies.

R. J. TRUPTIL.

Theorie der Produktion. By Dr. ERICH SCHNEIDER. Vienna: Julius Springer. 1934. 92 pp. Rm. 6.60.

Dr. Schneider must be congratulated for having written a book which in clarity and conciseness far surpasses any previous work on this subject. His book contains little that is new, at any rate for those who have followed the gradual emergence of further refinements in this field in various periodicals, but it is for the first time that these have been incorporated together in a manner which is at once straightforward, simple, and logical. Though the treatment is throughout mathematical or quasi-mathematical, it is comprehensible also to those with only a moderate mathematical understanding. Even those who might be inclined to doubt the ultimate usefulness of Dr. Schneider's general method of analysis will recognise that it represents a stage in the development of the theory which no student of the problems of production can afford to neglect.

The book is divided into three parts. The first deals with the technical principles of production, the second with the cost function of the firm, and the third with " production as a problem of market theory," *i.e.* the problem of the equilibrium of the single firm under various market conditions. In the first part the nature of the functional relationship between quantity of factors and the resulting product is discussed. In the second, the results obtained in the previous section are utilized for the solution of the problem, how, under varying assumptions as regards the variability of factors, the costs of production can be minimized for any given rate of output. This leads to the construction of the firm's cost-curve. In the last section the firm's cost-curve, together with the demand-curve, is shown to determine the firm's actual output, under the assumption that profits are maximized. Here Dr. Schneider distinguishes between different " strategic " cases—an expression borrowed from Professor Ragnar Frisch—according as the firm is a simple " quantity-adjuster " (*i.e.* perfect competition in both the factor and the product markets) or a " price-quantity adjuster " on the product side (imperfect competition on the product market, perfect competition on the factor-markets), on the factor side, or on both sides: giving the conditions of equilibrium in all these cases.

Starting with the basic principles of the production function, Dr. Schneider introduces a new term, the " Ergiebigkeitsgrad " (" elasticity of productivity " might be a suitable English equivalent), which is the exact quantitative expression of what is generally known as " returns to scale ", *i.e.* the relation between a small proportionate increase in all (or at any rate all variable) factors of production and the resultant change in output. This expression is greater than one in the case of increasing returns (when the output increases more than in proportion to the increase in factors), unity in the case of constant returns, and negative in the case of diminishing total returns (when a further increase of factors reduces aggregate output). This expression conveniently links up with the " adding up " theorem of Walras and Wicksteed (which Dr. Schneider calls, for some reason, the Wicksell-Johnson theorem) ; in that he demonstrates that the marginal productivity of variable factors, multiplied by their amounts, is always equal to the total product multiplied by the elasticity of productivity. The Wicksteed proposition then emerges as a special case where $\epsilon = 1$.

Dr. Schneider employs this concept in his analysis of cost-curves for demonstrating that the elasticity of the total cost-curve will be equal to the reciprocal of the elasticity of productivity (for the actual factor combination employed). This conclusion is true enough for " homogeneous and linear functions " when both these elasticities are unity. But when he goes over to the " economics of partial adjustment "—where some factors are assumed to be fixed when output is varied—and continues to draw the same conclusion for production functions which are not of the first degree, he seems to slip into error. For then, the above theorem will only be true in special cases where the *proportion* of the variable factors employed remains constant when output is varied—in other words, where the marginal productivity ratio between factors is always the same, given the proportion between the factors. Now there is no reason to assume why production functions which are not linear should still be " homogeneous " in this sense. (Dr. Schneider regards, of course, this conclusion as valid for all functions. But his mathematical proof is wrong. Equations 4 and 5 on p. 43, although they make use of the same symbols, do not mean the same thing. $\frac{dv_1}{dv_k} = \frac{v_1}{v_k}$ for the " Wicksell-Johnson " theorem, as defined in equation 1 on p. 19. But this is obviously untrue for equation 4, p. 43, where $dv_1 \ldots dv_k$ were assumed to be chosen in such a way as to minimize costs.)

In cases of " total adjustment "—where all factors figuring in the production function are regarded as variable—Dr. Schneider assumes that the elasticity of productivity is always unity, *i.e.* production functions are necessarily homogeneous and linear, " in the long run ". This implies a definition of " factors of production " which is so narrow as to subsume most of the significant changes of output—in cases where economies of scale are at all operative—under a change in the production function itself. Dr. Schneider consequently assumes that in all these cases a certain production function is optimal only for a certain range of output; the individual producing unit is assumed to choose that function which affords the lowest cost for the relevant range, and to change its production function whenever it expects a permanent change in its rate of output.

No doubt this is one way of surmounting the analytical difficulties due to "increasing returns"; but those of us who have tried it before soon came to the conclusion that it is not a very helpful way. For one thing it necessitates regarding every screw in a factory as a different factor of production; and these factors cannot be regarded as independent variables: many of them being themselves the product of some common factor or factors. A more important objection arises from the fact that when factors are defined in this way they can neither be considered as continuously divisible nor as variable relative to each other; and thus the whole *Zweck der Übung* is lost. As Dr. Hicks emphasized some time ago,[1] variability of technical coefficients is a "long-run phenomenon"; it comes about by factors changing their specialized form. Such a precise enumeration therefore conceals rather than clarifies the really significant variations. Similarly, so long as one treats "factors" in fairly large groups (something on the lines of the old three-fold classification), they can be regarded as continuously variable without doing too much violence to reality; since indivisibilities are also generally the result of "specialization". As soon as, however, one goes further and further and finally puts every distinguishable object in a separate class of its own, the theory becomes a mere catalogue: the generalizations originally evolved lose their meaning. "Total adjustment," for example (which, under perfect competition, should imply a proportionate increase in all factors), will hardly mean anything more than a doubling of the firm's entire output achieved by a precise reproduction of the firm itself. There is a deep underlying wisdom in the vagueness of Marshallian economics which seems to escape altogether the precision of the mathematical mind.

One could go even further and question the meaning of the type of production function on which Dr. Schneider's analysis is based. For what this production function will be like will depend entirely on the section of the production process which is covered by it. Any discussion about the nature of the "Betrieb," the carrier of this production-function, is conspicuously absent from the book. Yet it is clear that in the absence of this no unequivocal meaning can be given to the function. One might suppose that it refers to a single productive process, such as the smelting of iron ore into iron. In the majority of cases, however, no clear-cut technical division exists between one stage of production and the next. They merge into each other gradually. If, on the one hand, the "independent firm" is made the basis of the distinction—assuming that it can be sufficiently clearly demarcated—the range of variables is necessarily given by the productive resources bought by the firm; and there is no guarantee that this will be an adequate range for a homogeneous and linear function.

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[1] "Marginal Productivity and the Principle of Variation," ECONOMICA, February, 1932.

Nor can one any more applaud Dr. Schneider's other attempt at having his cake and eating it: the attempt to preserve continuity while allowing for indivisibilities through the distinction between "substitutional" and "limitational" factors. "Limitational" factors, according to Dr. Schneider following Professor Frisch, are those whose amount is fixed per unit of output. It is not clear whether this also implies that the amount of output is fixed per unit of factor—indeed, different passages in Dr. Schneider's book lend support to both these interpretations. It makes a fundamental difference, however, whether the first is meant or the second. In case the second, and the more rigid, interpretation is accepted, the presence of indivisible limitational factors is bound to make the output function discontinuous; since this necessarily implies that any reduction in the amount of substitutional factors employed (given the amount of the limitational factor) will reduce output to the same extent as a corresponding reduction in the amount of the limitational factor itself. It is therefore hardly compatible with his analysis of the "law of harmony" on pp. 51–57. On the other hand, Dr. Schneider's marginal productivity analysis is only compatible with this rigid interpretation. He calculates the marginal product of a substitutional factor by assuming that the "amount of the other substitutional factors is held constant, while the amount of the limitational factors is appropriately increased" (p. 5). This "appropriate increase" will only be something determinate if there is a rigid complementarity between the limitational factor and each of the substitutional factors.

If, on the other hand, the first and less rigid interpretation of the definition of limitational factors is accepted—which merely implies that there is a maximum amount of output which can be produced with the aid of a unit of factor—factors will automatically become limitational merely by being indivisible: at any rate if one accepts Professor Knight's assumption that "extreme variation in the proportion of factors in either direction yields a zero product,"[1] as a general property of the production function. (That Dr. Schneider himself accepts this assumption is shown by the shape of his isoquants on Fig. 1, p. 4.) For then it will be true of every factor, that there is a limit to the amount of output which can be produced with the aid of a given amount of a factor; while if that factor happens to be indivisible, it will be also true that any lesser amount of output will also require the same amount of factor. In case this interpretation of limitationality is accepted (and this is the only interpretation consistent with the cost-curves on pp. 55 and 56), Dr. Schneider's rather bewildering claim on p. 22 that "in accordance with the phenomena of reality indivisibility is merely to be found among limitational factors; while substitutional factors are continuously variable" boils down to the much more modest statement that "on *my* definition of limitationality, indivisible factors are necessarily limitational, while divisible factors are substitutional"; while the theory is back where it was for ages, *i.e.* that indivisibility of factors is not necessarily incompatible with a continuous output-function so long as there are some factors which are continuously variable. There was really no need to introduce new concepts for that. All this is not to deny that both indivisibility and complementarity in factors introduce problems which cannot easily be solved with the aid of existing technique; merely to question whether Dr. Schneider's new technique represents any advance towards the solution of these problems.

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[1] *Risk, Uncertainty and Profits*, p. 101.

That Dr. Schneider entirely confines himself to the "single product firm" and that he continues to operate with ordinary demand and supply curves even in "strategic cases" where such curves have little or no meaning (or at any rate without specifying what meaning should be attached to them), should be pointed out as further limitations of his analysis. But Dr. Schneider promises to have these matters treated in a further volume and until then detailed criticism on these points should be deferred.

NICHOLAS KALDOR.

Bibliography of Economics, 1751–1775. Prepared for the British Academy by HENRY HIGGS, C.B., Cambridge. At the University Press. 1935. xxii + 742 pp. 42s.

About the need for competent bibliographies as the basis of any work on the history of a science there can be no reasonable doubt. There could hardly have been a better foundation for such a work than the extraordinary wealth of material contained in the catalogues of the successive libraries accumulated (and of books not obtained) by Professor Foxwell during more than half a century of book-collecting. But the editing of the material thus gradually accumulated as a card catalogue is a monumental task if it is to be done with the care necessary in order that it may be done once and for all and that the result may be trusted implicitly. There can be no doubt about the exceptional competence of the editor and of the distinguished scholars whose help he acknowledges. And so far as completeness is concerned the editor and his collaborators seems to have done what is humanly possible. The 6,741 items which they list for the twenty-five year period covered by the volume seem to include practically everything which appeared during the period, not only in English, but also in French, German, Spanish or Italian, and which is of immediate interest to the economist. The boundaries drawn for the material to be included are if anything rather too wide than too narrow, and the arrangement of the titles under each year in eleven different groups is convenient. Mr. Higgs mentions in his Introduction that it is proposed to continue this first section of the bibliography backward and forward. All economists must wish that he will succeed in carrying out this plan in the not too distant future.

Yet, without being ungrateful and without underrating the enormous burden which such a work imposes on the editor, some doubts must be expressed whether in the present case too much of the work of checking the individual items has not been left to subordinate assistants. I may have been particularly unfortunate, but the first half-hour spent with the volume had revealed a surprising number of inaccuracies and slips and closer examination has not completely dispelled that impression. Hardly sufficient pains seem to have been taken in identifying the authors of anonymous works, or at any rate, an explanation ought to have been given if the attribution of an anonymous work to a particular author, *e.g.* in the British Museum Catalogue, was deliberately not accepted. Several times one and the same work appears twice only because one of the entries is inaccurate, *e.g.* Joseph Harris' *Essay upon Money and Coins*, once under the year 1757 (No. 1516) as if it had appeared with the author's full name, and a second time under the year 1758 (No. 1759) with the author's name correctly in square brackets. (The two parts of the work were actually published in the successive years, but the title given in the second year is again that of part I.) Similarly Matthew Raper's *Inquiry into the Nature of the Ancient Greek and Roman Money* is once given (No. 5267) under the year 1771 and a second time (No. 5519) with the author's name spelt " Roper " under the year 1772. (The alphabetical Index gives references to both items.) That " 4273. Ferguson, A., *Versuch über die Geschichte der bürgerl. Gesellschaft.* Leipzig 1768 " is explained as a " translation of Anderson's History of Civil Society " is evidently just a misprint. Somewhat puzzling is the following item : " 5847. Bentham, Jeremy. Introduction to Moral Philosophy, 2nd edn. 1773.8⁰." Is this a new discovery ? But the most surprising item to encounter among the publications of the year 1769 is undoubtedly the following :

" 4627. Schmoller, G. und Hintze, O. Die preussische Seidenindustrie im 18. Jahrhundert und ihre Begründung des (*sic*) Friedrich der (*sic*) Grossen. *Bd. I, Akten bis* 1768 ; *Bd. II, Akten seit* 1769 ; *Bd. III, Darstellung*, 1892. 3 vols. 8⁰."

The inclusion of this item can hardly be justified on the ground that in a few instances but by no means consistently (Adam Smith's Glasgow Lectures, F. Galiani's Correspondence, but none of the modern editions of David Hume's Correspondence) writings of economists have been included under the date when they were written, although they were only published much later. But to include modern publications of documents from official archives which illustrate the economic conditions of the period can hardly have been intended and would certainly mean that many more similar items should have been included.

F. A. VON HAYEK.

Select Tracts and Documents Illustrative of English Monetary History, 1627–1730. Edited by WM. A. SHAW, M.A. London: George Harding (George A. Wheeler). 1935. x + 214 pp. 21s.

If the success of some of the recent series of reprints of older works on economics sponsored by learned institutions encourages commercial firms to undertake similar publications, this is only to be welcomed. Apparently the literature on currency and banking proves particularly attractive for this purpose. After the well-known publishing house which has given us reprints of Tooke's History of Prices and more recently of one of Macculloch's volumes of Selected Tracts, one of the antiquarian bookdealers has now entered the field. The present volume, which is described as No. 1 of the "Wheeler Economic and Historical Reprints," reproduces the well-known collection, first edited by Mr. W. A. Shaw in 1896, of works of Sir Robert Cotton, Henry Robinson, Sir Richard Temple, "J. S.," Sir Isaac Newton, John Conduit, and extracts from the Domestic State Papers at H.M. Record Office. The date explains why the selection is largely guided by the light which the works included throw on the points at issue in the bimetallic controversy. But as it includes a considerable amount of material, including some of Newton's reports made in his capacity of Master of the Mint, which have never been published in another form, the volume is undoubtedly of considerable permanent interest. The reprint is neatly done and presents a very attractive appearance. But one wonders whether, if it were got up less sumptuously and the price kept correspondingly lower, the profit to the scholars for whom it is intended, as well as of the publishers, would not be greater.

F. A. VON HAYEK.

W. E. Hearn: First Australian Economist. By D. B. COPLAND. Melbourne University Press. 1935. 80 pp. 3s. 6d.

In the two lectures reprinted in this little volume Professor Copland, of the University of Melbourne, attempts a sketch of the life and economic doctrines of the "First Australian Economist," W. E. Hearn, and of their relation to recent Australian economic thought. In so far as he gives us an outline of Hearn's career and activities in Australia the book is a welcome contribution to our meagre knowledge about this great economist. But as an exposition and appreciation of his economic teaching the book can hardly be said to do justice to the memory of one who had a singular gift for stating original and penetrating observations in the most apt and lucid language. An appreciative discussion of Hearn's economics against the background of the teaching at Trinity College, and of his influence on later writers, still remains a desideratum. It is to be feared that the present attempt to use him as a peg on which to hang an exposition of the views of a particular group of modern Australian economists will do little to enhance his reputation.

F. A. VON HAYEK.

Insurance Against Credit Risks. By E. M. SHENKMAN. P. S. King and Son, Ltd., London. 1935. x + 358 pp. 15s.

This book provides a very useful study of the principles and practice of Credit Insurance. It is divided into two parts. In the first, after a preliminary and rather slight outline of existing methods of financing international trade, the author discusses the nature of credit risks, methods of meeting them, and the history of credit insurance provided by private enterprise. He distinguishes two main types of credit insurance—insurance taken out by the debtor to improve his credit-worthiness, and insurance taken out by the creditor to safeguard himself from abnormal losses from bad debts. The former type, which has close affinities with the ordinary documentary letter of credit of international commerce, Dr. Shenkman regards as lying rather outside the scope of his present investigation. The latter type, which has a closer resemblance to other forms of insurance, suffers in comparison with them from several peculiar difficulties.

In the first place, credit insurance is particularly subject to "catastrophe" risks; debts owed throughout whole industries, countries, or even the world, may be simultaneously affected by the onset of a local or general trade depression. It is therefore difficult or impossible to ensure that the risks covered shall have that independence of each other which is essential if insurance is to be anything but a gamble. In the second place, to insure a seller against abnormal bad debts without a frequent examination of his individual accounts is to lay the insurance company open to the effects of adverse selection; for once the premium is paid, it will be of advantage to the seller to undertake more risky transactions than would have paid him formerly. The experience of a seller before insurance is therefore not a reliable guide to his experience thereafter. Thirdly, if the insurance company seeks to prevent this by a scrutiny of individual accounts and transactions, the cost is very high, especially if, as is frequently the case, the debtor is located in a distant country where the insurance company has no special facilities for obtaining credit information. In this respect, insurance taken out by debtors, rather than by creditors, seems to have the advantage of lower costs. In view of these difficulties, it is hardly surprising that Mr. Shenkman's historical chapter consists largely of a record of failures. While the author undoubtedly appreciates and explains these difficulties, he hardly seems to emphasise them sufficiently. For instance, on page 60, in criticising Knight's contention that economic risks, as "true uncertainties," are unclassifiable and, therefore, unmeasurable and untransferable to an external agency, he contends that "when even these risks are classified according to the country of the debtor, the type of the commodity, the national currency, the duration of credit and the credit rating of the debtor, the tendency towards regularity of outcome in more or less similar cases will reassert itself." But in at least the first three of these classifications, the similarity between the included risks is surely due to the fact that they are largely influenced by causes common to them all, and are therefore not separate risks. Pooling within each group will therefore not eliminate irregularity of incidence, and insurance can be effected, if at all, only by combining risks from as many national, currency, and commodity groups as possible.

Again, on page 119, it seems to be implied that the danger of adverse selection can be avoided if insurance is confined to a *proportion* of the bad debts incurred in excess of normal. But it does not appear that this precaution will eliminate the "subjective" risk, though it may reduce it to some extent. If even a part of his excess bad debt loss is covered, it will pay the seller to undertake *some* transactions which he would otherwise have refused; for, once his premium is paid, he will get the whole profit from a transaction if it is successful and will only incur a part of the loss if it fails.

The only safe solution seems to be the "vetting" of each debtor's account separately; but in view of the high cost of this method of doing business it is not surprising to note (page 124) that in such a period of improving trade as the twenty years immediately preceding the Great War "the practice of insuring specific individual risks . . . became very rare. It was replaced by the insurance of the total turnover of the merchant . . ." On the other hand, in the difficult post-war years, one of the principal developments is said (page 138) to have been "the pooling of available information, placing it at the disposal of the insurance companies in each individual country." This seems to imply that a period of greater uncertainty has driven insurance companies back to a policy of "vetting" individual debtors' accounts, and to the international pooling of credit information in an effort to reduce the cost of this policy.

The second half of the book is in some ways more satisfactory than the first. It contains a description and analysis of the various governments' experiments in providing export credit insurance, regarded as measures for promoting exports and seen against the general background of Neo-mercantilism. A chapter each is devoted to the British and the German systems, the former consisting mainly of the partial guarantee of short-term credits, and the latter commencing with re-insurance against catastrophe risks and gradually developing with the onset of depression into the elaborate schemes of export subsidies at the expense of foreign creditors which have been so marked a feature of the past few years. Shorter accounts of the schemes developed in France, Belgium, Holland, and a number of other countries are also given. In his final chapter, the author concludes that the most appropriate field for government credit insurance lies in providing insurance or re-insurance against "political" risks, for which nearly every government bears some share of the responsibility, and which a government is in a better position to reduce by bargaining or pressure. This sensible conclusion has recently received official confirmation by the publication of a British government scheme for insuring exporters against the "freezing" of their foreign credits owing to the imposition of exchange restrictions.

F. W. PAISH.

Industrial Organization in India. By P. S. LOKANATHAN. Allen and Unwin. 1935. 391 pp. 15s.

Trade Unionism and Labour Disputes in India. By AHMAD MUKHTAR. Longmans Green. 1935. 251 pp. 10s. 6d.

The potentialities of industrial development in India form one of the most disputed and important of India's economic problems. Most Indian leaders desire more rapid industrialization, and it is widely held that this can be achieved mainly by Governmental action. Belief in the "infant industry" argument, and in its applicability to India, have tended to concentrate efforts upon a demand for protective tariffs, to the exclusion of other reforms. Unfortunately this attitude has entailed neglect of defects in the industrial sphere which can only be removed by quite different means. It is, therefore, a treat to discover an Indian economist who is concerned to enhance India's industrial position not by prohibiting or limiting rivalry, but by improving India's industrial structure, organization and leadership.

Dr. Lokanathan has made a first-class and first-hand study of industrial organization and finance in India. He analyses, far more thoroughly than has hitherto been attempted, the main features of the managing agent system—a system which has influenced fundamentally the whole process and structure of modern industrial development in India; deals in an illuminating manner with the problems of the localization of industries and size of industrial units; and explains and criticizes prevailing methods of promoting and financing large-scale industries. A short chapter on wages and labour efficiency completes the work.

Many of the facts and figures on which Dr. Lokanathan's conclusions are based have been collected by personal investigation and enquiry, and the work reveals not only sound scholarship but also the power (so often lacking) of asking the right questions, both of others and of himself. It is, indeed, one of the most important studies of Indian economic conditions which has been published for many years.

The author stresses, in particular, important defects in (*a*) existing methods of promoting industrial enterprises; (*b*) prevailing theories and practices of industrial finance—as is shown *e.g.* by the prevalence of "undercapitalization"; and (*c*) the sphere of leadership. In the latter connection he calls attention to the necessity of distinguishing between the merits and defects of the Managing Agent System, and the merits and defects of the entrepreneurs who work the system. However the system may be altered, many of the present captains of industry will remain in control of industries, so that merely to amend the system will not cure some of the worst defects. What is required, he concludes, is not to abolish the Managing Agent System—a suggestion that he considers both unnecessary and inadequate—but to reform it, partly by amendments in the Indian Company Acts, and partly by the gradual construction of a recognized code of business principles and professional behaviour amongst Indian industrial leaders. In particular it is desirable to welcome " new blood " into the ranks of the industrial leaders, chosen on account of talent and training—and not (as at present) because of personal ties and relationship. Many of Dr. Lokanathan's detailed recommendations for achieving these and other desired ends show wisdom and insight, and deserve the serious attention of all who are interested in India's industrial future.

In his *Trade Unionism and Labour Disputes in India* Professor Mukhtar gives a clear, straightforward account of the evolution, present position, and organization of Trade Unions, of the course of industrial disputes, and of legislation with regard to Trade Unions and industrial conciliation in India. The subject is one which has hitherto received insufficient attention in India, and the importance of developing the Trade Union Movement along sound lines can hardly be exaggerated. It is notorious that both the standard of life and the output per head of industrial workers in India are exceptionally low, and this may be partly attributed to faulty organization in the spheres of both management and labour. Professor Mukhtar's account draws attention to many defects in the Indian Trade Union Movement, from which helpful guidance can be obtained as regards future policy. The book can be heartily recommended as a useful survey of the whole subject, and attention may be specially drawn to the Appendices, which contain the principal legislation at present in force in India affecting Trade Unions and the relations between employers and employed in modern industries.

VERA ANSTEY.

The Railway King. By RICHARD S. LAMBERT. Allen & Unwin. 1934. 320 pp. 12s. 6d.

Mr. H. G. Wells has recently reminded us that we know more about minor poets than we do about great business men. The entrepreneurial function is more discussed in economic theory than entrepreneurs are in economic history, which is a pity. For we have been left to venerate where presently we do not understand. There is wisdom of a sort in this : Mr. Lambert's sub-title, " a study in business morals," may set some calling for decent reticence.

In this well-written book, scholarly though without footnotes, Mr. Lambert has removed the reproach that we have no adequate study of George Hudson, the Railway King of the 1840's. Hudson was the first great entrepreneur of the modern business era and he played a high part in two of its aspects: the railways and the almost uncontrolled risking of other people's money by the business men in charge. Hudson's early life of draper, legatee and local Tory politician is passed under review, until Mr. Lambert rises to the main theme, Hudson and the railways. Hudson was one of the few men who rose above the *laisser-faire* anarchy of the time: he saw the need for a planned railway system and by his amalgamation in 1843 of the York and North Midland, the North Midland, the Derby and Birmingham and the Midland Counties under his own control, he demonstrated both method and feasibility. Within six years he was monarch over 1,450 miles of England's 5,007 miles of railways. But the crisis of 1847 and the revolutions of 1848 rent his kingdom from him, though time has confirmed the accuracy of his planning principles.

For, like many other great entrepreneurs, he was not too straightly honest. He falsified accounts, manipulated capital and revenue expenditure, declared dividends on insufficient profits, dealt with his companies to his own secret advantage, and so on. He was not always the conscious rogue, and his shareholders seemed complacent, for they benefited by the premiums he created. As *The Times* remarked, "Mr. Hudson's position was not only new to himself, but absolutely a new thing in the world altogether." Hudson was never criminally prosecuted, for the law was insufficient. After some years of exile he died in peace—chairman of the smoke-room at the Carlton Club.

Four excellent railway maps show both the development of Hudson's own system and of British railways, 1840–9.

Mr. Lambert keeps close to Hudson. He does not so adequately fulfil the sub-title, a study of the "business morals of his time." He must have the material: can we tempt him to a second volume?

H. A. SHANNON.

Die Kursbildung am Aktienmarkt (*Vierteljahrshefte zur Konjunkturforschung, Sonderheft* 36). By DR. OTTO DONNER. Hanseatische Verlagsanstalt, Hamburg, Berlin. 1934. 110 pp. Rm. 13.50.

Dr. Donner distinguishes three types of force determining the course of share prices: Fundamental factors, Sub-factors and Technical factors. The fundamental factors are profitableness and available means of payment. Volume of production, commodity prices, currency conditions and the position in the international market are classified as sub-factors which influence share-prices only *via* the fundamental factors. To the technical factors, which refer to the speculative position, the writer attributes an independent but temporary influence. The last two chapters of the study contain some details of trend, cyclical and seasonal share-price movements, and a quantitative analysis of short period fluctuations.

Dr. Donner reaches some interesting statistical results. He finds that in Germany, over the period 1888–1913, the highest correlation (+ 0.9) between share-price and dividend movements is obtained by taking the prices with the dividends that were declared half to three-quarters of a year later. This result, though perhaps unexpected, is less questionable than some of the conclusions the writer reaches concerning the relationship between share-prices and interest rates. The prices of shares and fixed interest securities are found to show a parallel movement, share-prices lagging. Between share-prices and money rates Dr. Donner gets a positive correlation of 0.7 by associating share-prices with the money rates of one year after. As regards the average level of fixed interest security yields, it is stated that before the war these were lower than the yield on shares by an amount which, though different in different countries, remained very steady within each country examined. The post-war period has been characterized not only by the greater instability of the relationship, but also by a fall of the average yield on shares below that on fixed interest securities—a feature suggestive of the lack of confidence in monetary stability. Dr. Donner believes that there is a tendency for the degree of fluctuation in share-prices to grow smaller, post-war disturbances having outweighed this tendency. He also notices the relatively short duration of the upward phase in share-prices, which usually decline early in the trade cycle, and recover late.

An interesting attempt is made to find a quantitative relationship between share-price movements, on the one hand, and changes in dividends and interest rates on the other. Regression equations are worked out for the pre-war and post-war periods separately. According to the figures obtained, the influence of dividends on share-prices has been less since the war, while that of credit conditions has been much greater. The influence of international conditions has also declined.

Dr. Donner's results are illuminating, but they must be received with caution. The writer's approach to his problem, the solution of which lies in the relationships between a large number of interdependent variables, is not fortunate. The analysis is too sectional. " Profitableness of investments," which means the dividend capitalized at the current rate of interest, is treated in a separate chapter from " available means of payment." Dr. Donner is indeed at pains to explain that the " interest rate and the volume of credit are to a certain extent independent of each other." But since interest rates play at least a significant part in regulating the volume of credit, the procedure does not seem justified. Early on in the study the author states that competition between the share and the fixed interest security markets for funds should bring about a certain solidarity between share yields on the one hand and long and short term interest rates on the other. The parallel movement between the two which Dr. Donner later deduces from his figures would support the view that the banking system pursues an alternating policy of inflation and deflation—a conclusion which is implicit in much of the analysis. The statistical material given is sometimes too slender to lend significance to the conclusions the writer draws. It should, moreover, be remembered that the figures relate mostly to Germany, and to the United States.

A study of the forces governing share-prices must ultimately rest on a clear theory concerning the nature of the relationship between the variables considered. Dr. Donner is indeed conscious of the complexity of these relationships. Nevertheless, failing the use of a systematic theory to explain them, his empirical results cannot be quite satisfactory.

H. Makower.

Internationale Kapitalbewegungen. By Ragnar Nurkse. Julius Springer, Vienna. 1935. x + 248 pp. Rm. 7.80.

This work is a systematic discussion of the different aspects of the phenomenon of international capital movements. It commences with an investigation of the nature of factor mobility and the relations between the movements of capital labour and goods. The next two chapters are devoted to the actual phenomena of transfer, first on the exchange markets, then in the realm of relative prices and incomes. There follows a chapter on the broader effects of capital movements with particular reference to the effects on the "vertical" structures of production in both lending and borrowing countries. This in turn leads to a chapter on capital movements and the trade cycle. The work concludes with a short survey of different types of transfer and their relation to the risk factor.

In a work of this degree of abstraction, much depends on order and exposition. Dr. Nurkse deploys his propositions well and there are few sections in which he does not contrive by the great clarity of his arrangement in reaching a point from which new relationships are visible. His book will not satisfy those who wish altogether to jettison traditional analysis in this sphere. But it does much to demonstrate that the methods of traditional analysis are still capable of furnishing new insight. Dr. Nurkse acknowledges indebtedness both to Ohlin and to Haberler: it is not the least of his services that he brings us to see the essential underlying unity in the views of these two authorities on the important subject he has chosen for discussion.

This process of unification and advancement of existing knowledge is perhaps at its most effective in the two central chapters on transfer and the terms of trade. Dr. Nurkse commences by abstracting completely from costs of transport: transfer is assumed to take place in what is essentially a *single* market. In such conditions, he has no difficulty in demonstrating that there is no general presumption regarding the effects of transfer : the terms of trade may as well turn in favour of the *lenders* as against them. He then introduces the assumption of costs of transport and succeeds in establishing that the existence of more than one market, the existence, that is to say, on each side, of both " home goods " and " international goods " does constitute some basis for the traditional presumption that the terms of trade may turn against the lending country. It is interesting to observe that a substantially similar result has been reached independently in Dr. Iverson's interesting book, which was published almost simultaneously with Dr. Nurkse's. The analysis by which it has been reached by both these authors represents a real advance in knowledge.

In the last section of his book Dr. Nurkse leaves these high planes of abstraction and allows himself to speculate on the future of international capital movements. He has no difficulty in showing the vast change in the nature of these movements that has accompanied the growth of economic nationalism and he does not conceal the possibility that this may continue. He warns us, however, against undue generalization from the present disturbed condition of things and concludes with the reflection that whatever course is adopted, it will remain true that any deviation from the optional distribution of resources is likely to be disadvantageous not merely for the national systems immediately concerned, but also for the human race as a whole. This section is all too brief and it is to be hoped that, if as rumour suggests, Dr. Nurkse contemplates an English edition of his work, he will develop it further giving some empirical ground for his hopes and his apprehensions. There is no problem of international economic policy more urgently in need of the illumination which comes from the vantage point of Geneva.

LIONEL ROBBINS.

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Mr. J. M. Keynes' General Theory of Employment, Interest and Money[1]

By A. C. Pigou

I

When, in 1919, he wrote *The Economic Consequences of the Peace*, Mr. Keynes did a good day's work for the world, in helping it back towards sanity. But he did a bad day's work for himself as an economist. For he discovered then, and his sub-conscious mind has not been able to forget since, that the best way to win attention for one's own ideas is to present them in a matrix of sarcastic comment upon other people. This method has long been a routine one among political pamphleteers. It is less appropriate, and fortunately less common, in scientific discussion. Einstein actually did for Physics what Mr. Keynes believes himself to have done for Economics. He developed a far-reaching generalisation, under which Newton's results can be subsumed as a special case. But he did not, in announcing his discovery, insinuate, through carefully barbed sentences, that Newton and those who had hitherto followed his lead were a gang of incompetent bunglers. The example is illustrious : but Mr. Keynes has not followed it. The general tone *de haut en bas* and the patronage extended to his old master Marshall[2] are particularly to be regretted. It is not by this manner of writing that his desire to convince his fellow economists (p. vi) is best promoted.

II

The group of persons whom, on this occasion, he parades as a foil, are the " classical economists," with, as particular examples, " Ricardo, Marshall, Edgeworth and Professor Pigou." The device of lumping all these persons together is an ingenious one ; for it enables the shortcomings of one to be attributed to all. For example, Professor Pigou, in a book on Unemployment, which is "the only detailed account of the classical theory of employment which exists," (p. 7) has committed a variety of sins. Professor Pigou is a classical economist ; therefore the classical economists have committed these sins ! Moreover, when one of the arraigned persons has palpably not made a particular mistake, the method of lumping enables Mr. Keynes to say that he *ought* to have made it, and that, in not making it, he has been false to the "logic" of his own school—has allowed his "good common sense to overbear his bad theory," (p. 277). Finally, this device has, for anyone adopting it, the great advantage that it renders any complete reply impossible.[1] When a man goes on a sniping expedition in a large village, nobody will have the patience to track down the course of his every bullet. The best that can be done is to illustrate his methods by selected examples and to enquire in a broad way into his total accomplishment.

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[1] *The General Theory of Employment, Interest and Money*, by J. M. Keynes (Macmillan and Co., pp. 403, 5s.).

[2] Cf. the sarcasm—quite irrelevant to the argument—on p. 184.

It is convenient to begin with a relatively small matter. On p. 20 Mr. Keynes quotes a sentence from *The Economics of Industry* written by Mr. and Mrs. Marshall in 1879. The sentence runs :—"It is not good for trade to have dresses made of material that wears out quickly. For, if people did not spend their means on buying new dresses, they would spend them on giving employment to labour in some other way." This sentence is cited by Mr. Keynes as a proof that Marshall at that time, though in later life he became "very cautious and evasive"—the second epithet is characteristic—believed that "an act of individual saving inevitably leads to a parallel act of investment" (p. 21). Now, it must be conceded that the sentence quoted is, as it stands, taken in isolation, inexact. But that Marshall was speaking in a limited context, and did *not* mean that a man *inevitably* expends on something the whole of his income, is apparent to anyone who will read the book to the end. For, in connection with general industrial fluctuations, which, after all, is the proper place for these considerations, it is explicitly stated :—"Though men have the power to purchase, they may not choose to use it."[2] Mr. Keynes had himself quoted this sentence in another connection in a footnote on p. 19, but nevertheless has allowed the statement on p. 21, cited above, to stand.

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[1] On pp. 138 and 148 Mr. Keynes goes one better and brings charges of ignoring, or not analyzing carefully, what the present writer had imagined to be familiar commonplaces, against "most discussions" and against "economists" without further specification !

[2] *The Economics of Industry*, 2nd Edition (I have no copy of the 1st Edition), p. 154.

Here is a second charge against Marshall, this time much more important. The classical economists, speaking through him, discuss the money rate of interest on the basis of an analysis of distribution conducted exclusively in real terms. Now it is obvious that the money rate of interest cannot be determined by real factors alone. There is one equation short. The classical economists, again in the person of Marshall, failed to perceive this. Consequently their whole analysis breaks down. "The perplexity which I find in Marshall's account of the matter [Interest Theory] is fundamentally due, I think, to the incursion of the concept 'interest,' which belongs to a monetary economy, into a treatise which takes no account of money. Interest has no business to turn up in Marshall's *Principles of Economics* —it belongs to another branch of the subject" (p. 189).[1] Now read Marshall: "Throughout the present volume we are supposing, in the absence of any statement to the contrary, that all values are expressed in terms of money of fixed purchasing power, just as astronomers have taught us to determine the beginning or the ending of the day with reference, not to the actual sun, but to a *mean sun*, which is supposed to move uniformly throughout the heaven."[2] Thus Marshall has deliberately and in express terms introduced a specific condition about money—i.e. provided the missing equation—the necessity for which Mr. Keynes accuses him of failing to perceive.

Misrepresentation of a like character is directed against the classical school in the person of Professor Pigou. In reading chapters by that writer in the *Theory of Unemployment* about the *elasticity of* the real demand schedule for labour, Mr. Keynes fails to find any reference to the consequences for unemployment of changes in the *position* of that schedule, and comments: "It is, indeed, strange that Professor Pigou should have supposed that he could furnish a theory of unemployment which involves no reference" to such changes (p. 275). Had Professor Pigou really done this, "strange" would have been much too weak a word. In fact in later parts of the book these matters *are* discussed (particularly in Part V, Chapter 9, and Part III, Chapter 15), and in the Preface it is explained that further discussion is dispensed with because it is already provided at length in the writer's *Industrial Fluctuations*.

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[1] In the course of this discussion of Marshall's Interest Theory there is a curious minor lapse. Marshall had written: "An extensive increase in the demand for capital will, therefore, be met for a time, not so much by an increase of supply, as by a rise in the rate of interest." Mr. Keynes comments: "Why not by a rise in the supply price of capital goods? Suppose, for example, that the extensive increase in the demand for capital in general is due to a *fall* in the rate of interest" (p. 187). Is it not evident that this is just the thing which in the context must *not* be supposed? Marshall was speaking of a *rise of* the demand curve for capital. Mr. Keynes retorts by speaking of a movement *along* a stationary demand curve.

[2] *Principles of Economics*, p. 593. There are similar passages on pp. 69 and 150 of Mr. and Mrs. Marshall's *Economics of Industry* referred to above.

There remains Mr. Keynes' fundamental charge against the classical school as a whole. This may be set out thus. According to that school the aggregate quantity of labour employed at any time is, subject to agreed qualifications, determined at such a level that the real wage rate offered by employers is equal to the real wage rate which workpeople ask for as a condition of that quantity of labour being supplied; broadly it is determined at the intersection of the real demand curve and the real supply curve of labour. Now "involuntary employment," as defined by Mr. Keynes (p. 15), prevails if a rise in money prices relatively to money wages would bring about an increase in the volume of employment. "So long as the classical postulates hold good, unemployment, which is in the above sense involuntary, cannot occur" (p. 16). For the classical school must hold that, the real supply schedule being given, a rise in money prices, unaccompanied by an equivalent rise in money wages, implying, as it does, a fall in the real wage-rate offered, will cause the amount of labour coming forward to decrease. "This strange supposition apparently underlies Professor Pigou's *Theory of Unemployment*, and it is what all members of the orthodox school are tacitly assuming" (p. 13). Again: "It is important to emphasise that the whole of Professor Pigou's book is written on the assumption (Mr. Keynes' italics) *that any rise in the cost of living, however modest, relatively to the money wage will cause the withdrawal from the labour market of a number of workers greater than that of all the existing unemployed*" (p. 277). The hiatus here is glaring. In order to demonstrate the futility of the classical economists, Mr. Keynes needs to father on them a *second* postulate; namely, that monetary happenings are incapable of *affecting* the real supply schedule of labour. For, of course, if they can affect it, they are competent to modify the volume of employment *in spite of* the real demand price and the real supply price of labour standing always in equilibrium. Mr. Keynes completely fails to see the need for fathering this postulate on them in order to validate his charge. If he had seen this need, he could not, of course, have met it. One "classical economist" at least, in a book which he particularly criticises, has been at pains, not indeed to refute that postulate, for it never occurred to him that anyone would assert it, but to enquire *how*—in the short period—monetary happenings *do* alter the real supply schedule of labour.[1]

In my first draft a paragraph stood here characterizing in frank terms this macédoine of misrepresentations, from which I have extracted sample prints. The temptation to let that paragraph remain has been strong. But

> Why comes temptation but that man should mount,
> And master, and make crouch beneath his feet,
> And so stand pinnacled in triumph ?

The reader has been given the facts. It is for him to pass judgment upon them.

III

The positive parts of Mr. Keynes' discussion do not depend on the negative parts. Any bias that a reading of those parts may have generated in our minds must be firmly put aside, and the positive parts studied on their own merits. But here at once a serious obstacle is encountered. His argument is in places so obscure that the reader cannot be certain what precisely it is that he is intending to convey. That there should be this difficulty about Mr. Keynes' scientific writings about economics—it was present also in a less degree in the more theoretical parts of his *Treatise on Money*—is very curious. How is it that an author, whose powers of exposition enabled him to write on the philosophy of Probability in a way that amateurs could follow—not to say one whose vividness of phrase has made him a valued contributor to the *Daily Mail*,[2] when he comes to the subject to which he has devoted most attention, is barely intelligible to many—for I am not alone in this—of his own professional colleagues ?

A part of the explanation is, beyond doubt, his loose and inconsistent use of terms. Thus on page 5 (footnote) " involuntary unemployment " is used in a different sense from that in which it is defined on p. 15. On p. 5 " marginal product of labour " is used for what, two lines lower down, becomes a *value*, and on p. 6 is called " value of the product attributable to its marginal productivity." On the same page we have " the utility of the marginal product," when what is meant is the utility of the money wage. Again, on p. 5 the classical economists are said to maintain that the utility of the wage is equal to the disutility of the marginal employment, whereas on pp. 14 and 15 it is the real wage itself, not its utility, that is set over against the disutility of marginal employment. Again, on p. 28 there suddenly appears " the propensity to consume," a new entity which is not defined till p. 90, while no forward reference to the definition is given. But much more serious examples of loose language occur in connection with " liquidity preference " in Chapter XIII. At the beginning of that chapter income means real income, and the demand for money the real value that people choose to hold in money form ; but, later on, income means money income and the demand for money some relation between the quantity of money and the rate of money interest. Thus on p. 166 we read : " An individual's liquidity preference is given by a schedule of the amounts of his resources, valued in terms of money or of wage units, which he will wish to retain in the form of money in a given set of conditions " ; and on p. 167 the rate of interest is " the ' price ' which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash." Here liquidity preference is, in effect, the Marshallian k, which, when real income is given, depends, *ceteris paribus*, on the rate of interest. But on p. 168 " liquidity preference is a potentiality or functional tendency, which fixes the quantity of money [no longer the real value held in the form of money], which the public will hold when the rate of interest is given " ; and on p. 171 we have " the schedule of liquidity preference relating the quantity of money to the rate of interest."[1] When the Marshallian rabbit k has in this way become transmuted into a Keynsian fox, the hunter, faint but pursuing, suddenly sees it multiply itself by fission! On p. 119 he sees, flying before him over the greensward, *two* liquidity functions, one relating one portion of the quantity of money to quantity of income, the other relating a second portion to the rate of interest. What can any hunter feel but a wholly bewildered and half amused exasperation?

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[1] Cf. Pigou, *The Theory of Unemployment*, Part V, ch. 9.

[2] This poisoned dart is discharged—the skeleton must face the light—by one who himself on one occasion yielded to the blandishments of the *Sunday Express* !

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[1] It is possible that " quantity of money " is an extremely loose expression for " proportion of money stock to money income." If this is so, the confusion is merely verbal ; for, of course, this proportion is identical with the proportion of real value held in money form to real income. But in a later passage Mr. Keynes writes : " Men cannot be employed when the object of desire (i.e. money) is something which cannot be produced and the demand for which cannot be readily choked off " (p. 235). Here it seems clear that it is money itself, not merely a certain real value in the form of money, that, in Mr. Keynes' view, people desire to hold.

As was the lot of the singer Apollo,
  So hath the lot of his follower been,
Beauty and youth through the valley to follow,
  Winning no mead but a chaplet of green!

And even Apollo's nymph did not turn into *two* trees!

A second partial explanation of Mr. Keynes's obscurity is to be found, I think, in his desire to reach a stage of generality so high that everything must be discussed at the same time. For example, in his chapters on "the propensity to consume" he wishes to consider what will happen in certain circumstances (i) if the money rate of wages is fixed, (ii) if it varies. The natural procedure would be to work out the problem first on the simpler hypothesis, and then to enquire how far the results reached need to be modified if the more complicated one is substituted for it. Mr. Keynes rolls the two enquiries together by asking, in effect, what will happen in the eventualities contemplated if *money income divided by money wage rate* is constant.[1] Since in fact different things will happen, or —not to beg the question—since it is far from obvious that different things will *not* happen, when this quotient is constant because both money income and money wage rate are constant, and when it is constant because both are varying in the same proportion, the reader inevitably feels perplexed and insecure. There are many other examples of this method. Mr. Keynes' preference for attacking complex problems as wholes, instead of breaking them up and organising a methodical approach, makes the task of following his argument and disentangling his various assumptions exceedingly exacting.

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[1] It is, of course, obvious that to halve money wage-rates and to leave the sum spent on wages unchanged has the same effect on employment as to leave money wage-rates unchanged and to double this sum. But to double money income only implies doubling this sum in very special cases, i.e. if it has no effect on the quantity of employment or if the function describing labour's productivity (with the help of the given equipment) has one particular form.

A third partial explanation is the existence of a serious internal inconsistency among the premises with which he works. Thus on p. 114 he writes: "The fluctuations in real income under consideration in this book are those which result from applying different quantities of employment (i.e. labour units) to a given capital equipment," and on p. 245 he says again that the quantity and quality of available equipment and existing technique are taken as given. But throughout the main part of his book he supposes that some new investment is being undertaken every year. It is evident that, if this is happening, capital equipment cannot be unchanged. He is assuming in fact a stationary state and at the same time a moving one. Moreover, on p. 335 he is found applying an analysis built up on the assumption of stable technique to a progressive state that is "growing in wealth somewhat rapidly." Nobody could make use of mutually inconsistent hypotheses in this way if he had achieved complete coherence among his ideas. The lack of clarity in Mr. Keynes' explanation is *mainly* due, I suggest, to a lack of clarity in his thought, a lack of clarity which he now himself recognises to have been present when he wrote the *Treatise on Money* but, naturally enough, now believes himself to have overcome.

In any event, whether this explanation is right or wrong, the fact of, and the difficulty resulting from, his obscurity remains. I am not confident of having fully grasped his meaning, and *may*, therefore, in attempting to evaluate his book, do injustice to it by neglecting or relegating to a subordinate place some element which he himself considers to be essential. I may even have missed, as has happened before now to critics of new work, some vital and path-breaking contribution to thought. None the less, the attempt must be made. Since, with a book of this character, a detailed running commentary would be both tedious and unilluminating, I shall not adopt that method, but shall build what I have to say round six dominant themes. These are the 'multiplier,' the rate of interest, the problem of saving, the relation of money wages to real wages and employment, what I shall call Mr. Keynes' vision of the day of judgment, and his view that it is practicable by State and Bank action to abolish all unemployment other than what he conveniently calls frictional unemployment.

The Multiplier

In given conditions people have a propensity to spend on consumption, not the whole, but only a proportion (generally large) of their income. Since, therefore, an increase in net investment, due, for example, to new public works, increases income, it leads indirectly to further expenditure on consumption, and so, even though no further investment takes place, to a net increase of employment substantially larger than that directly due to the original net investment. This is, no doubt, in a general way, correct. But the detailed analysis is, in my opinion, defective in an important respect. Mr. Keynes recognises that, if the government invests, say, £10 Mn. in public works, this ten million of new investment is not all net. There has to be set off against it a contraction in other forms of investment, the amount of which depends, in large part, on what banking policy is being pursued. The more the rate of interest is raised as an indirect consequence of the government's call for ten millions, the smaller the net investment will be. But, while acknowledging this, Mr. Keynes proceeds as though, bank policy having settled what net investment is to be, the 'multiplier' then comes in as an independent factor to determine how much additional employment the given net investment will carry with it. This is surely a mistake. The larger the multiplier is, the more money income will need to rise in consequence of a given net investment. In so far as bank policy resists rises in money income—puts up money interest in the face of them—the larger the multiplier is, the smaller will be the net investment consequent on a given addition to gross investment. It is only with a banking policy directed to keep the money rate of interest constant in all circumstances that the addition to net investment and the multiplier are independent and, so to speak, additive factors, jointly determining the effect on the volume of employment.

The Rate of Interest

Turn now to a matter which plays a large part in Mr. Keynes' general scheme, his view about the way in which the money rate of interest is determined. In some passages he appears to deny that real conditions have anything to do with the money rate of interest; to assert that this rate, while acting on, and setting a limit to, employment, is not itself acted on from the real side. For example, on p. 355 he seems to agree with Gesell that "the rate of interest is a purely monetary phenomenon." If this were in fact his view, Mr. Keynes' divorce from classical thought would be complete. But is it in fact his view ? If business men's expectations improve—in Mr. Keynes' terms, if his schedule of the marginal efficiencies of capital rises—some forms of illiquid property will come to be desired more than before relatively to money. Of course, if banking policy is directed (successfully) to keeping the money rate of interest constant in all circumstances, that rate will not change. But, with any form of banking policy which has ever actually been pursued, it must inevitably rise, and, as history abundantly demonstrates, has in fact risen. Despite appearances to the contrary, I do not think that Mr. Keynes would disagree with this, and, if I am right, there is so far no conflict.

When, however, we pass, in Chapter 17, to further developments, this is no longer so. In that Chapter he sets himself this problem. The money rate of interest, as he has argued, set a limit to employment, because "it sets a standard to which the marginal efficiency of a capital asset must attain if it is to be newly produced" (p. 222). But in equilibrium rates of interest may be different when expressed in terms of different commodities ; there is a wheat rate of interest as well as a money rate. How then does it come about that it is the money rate, and not one of the others, which sets a limit to employment ? Mr. Keynes answers : "It is the greatest of the own-rates of interest (as we call them) which rules the roost." He sums up the matter, in a prose passage which cries out for quotation, thus : "Our conclusion can be stated in the most general form (taking the propensity to consume as given) as follows : No further increase in the rate of investment is possible when the greatest among the own-rates of own-interest of all available assets is equal to the greatest amongst the marginal efficiencies of all assets, measured in terms of the asset whose own-rate of own-interest is greatest" (p. 236). But for various reasons, developed at length, "it is the money rate of interest which is often the greatest" (p. 223). *Therefore* it is the money rate which rules the roost. The weakness of the "often" in this sentence—a necessary weakness, for, obviously, in December, for example, the strawberry rate of interest on a six months loan is enormously greater than the money rate—should have warned Mr. Keynes that he had unwittingly entered a mare's nest. Unless I have completely missed the drift of this confused and most confusing chapter, there can be no doubt that that is what he has in fact done. For suppose that the money rate of interest is 5 per cent. and the wheat rate 4 per cent., that a quarter of wheat now costs a £, and that we are deliberating whether or not to invest an r^{th} £. This r^{th} £, if invested, is expected to yield a series of returns Q_1, Q_2 . . . expressed in money, or a series R_1, R_2 . . . expressed in wheat. To obviate opportunities for arbitrage profit, the present value of the Q series at 5 per cent. must be the same as that of the R series at 4 per cent. Both present values alike must be £1 = 1 quarter of wheat. It makes no difference whatever which standard of value is used. Mr. Keynes has forgotten that, if expected returns are to be discounted at the wheat rate instead of at the money rate, the returns themselves must be expressed, not as sums of money, but as sums of wheat. So soon as this is remembered, his problem, and with it his solution, vanishes in smoke.

SAVING

Our next topic is the problem of saving. Mr. Keynes' conclusions on this matter are quite clear cut: "Our argument leads towards the conclusion that in contemporary conditions the growth of wealth, so far from being dependent on the abstinence of the rich, as is commonly supposed, is more likely to be impeded by it" (p. 373). The ground for this is that a decision not to expend money on consumption is not a decision to expend it on investment. That nobody denies. Saving *may* take the form of hoarding; and, if it does, provided that the money rate of wages does not change, not merely will employment on investment goods not be increased, but employment on consumption and investment goods together will, through various repercussions, be diminished. Thus saving *need not* promote the creation of new capital; and in certain circumstances will not do so. For example, propaganda in favour of private "economies" during the down-rush of a slump will simply make unemployment worse. But Mr. Keynes' conclusion goes much further than this. He holds that, in contemporary conditions, saving, or at all event a predominant part of saving, *will* take the form of hoarding. Is this true ? To reach a conclusion about this two distinct steps have to be taken.

First, in normal times when a man decides to save, his decision is not usually a thing complete in itself. It is part of a wider decision. He saves, not in order to accumulate money in a stocking or in a bank balance, but in order presently to buy a house or a motor car, or to invest in interest-bearing securities. When the second part of this wider decision is carried out—in the case of the house or motor car, obviously and directly, in the case of securities by a more roundabout process—he causes labour to be employed in creating new capital. It may well be, indeed, that the second part of his decision is realised some months after the first. But, so long as the aggregate rate of saving and the length of the interval are constant, this does not matter. The first part of one man's act always synchronises with the second part of another man's, and no net hoarding takes place. If saving is going on steadily at the rate of a hundred millions a year, the stock of capital will, in general, be growing at a corresponding rate ; and similarly if saving is going on steadily at the rate of two hundred millions a year. *While the rate is being increased* from one hundred millions to two hundred millions, the lag of the second part of the saving-investment act behind the first does, it is true, entail some net hoarding. But this goes a very little way towards warranting Mr. Keynes' sweeping generalisation. The error into which, I conceive, he has fallen may be illustrated thus : A decision to have one's teeth extracted is not in itself a decision to buy false ones. But few people in fact make the first decision without also making the second. Since false teeth are only wanted some months after the extraction, an *increase* in the number of extractions does not at once entail an addition to the capital stock of false teeth. But, none the less, a low propensity to retain one's natural teeth *is* " conducive to the growth " of that capital stock.

Secondly, when a decision to save on the part of an individual does not carry with it a further decision by that individual presently to invest, the consequences of his decision are indeterminate until the character of the banking policy that is being pursued is given. With a policy directed to keeping aggregate money income stable, all individual hoarding must be associated with equal dishoarding; and so, since the dishoarding will in practice be directed towards investment goods, with an equivalent addition to capital. With each specified other type of bank policy other consequences will follow. Mr. Keynes rightly holds that with a stable-income banking policy successfully carried out no savings can become hoarding. His language suggests that with any other banking policy,—as he puts it, when conditions of full employment do not prevail—*all* saving will become hoarding. He would, however, I think, agree that in fact, apart from the day of judgment (cf. *post*, p. 129), *some* would become hoarding and *some* generate new capital, the proportion depending on the precise type of banking policy that is being pursued.

Money and Real Wage Rates

The accepted view about the relation between money wage rates on the one hand and real wage rates and employment on the other is that a reduction of money wage rates will carry with it some, though not necessarily a proportionate reduction of real wage rates and will, in general, increase the volume of employment. For *all-round* reductions in a closed system Mr. Keynes at first sight seems to deny this, asserting instead that the fall in money wages will entail an equi-proportional fall in prices and so leave real wages and employment unaltered. If this is in fact his view, there is undoubtedly a sharp conflict between him and the classical school. But, once more, is it in fact his view? Closer consideration leaves a doubt. For he has not distinguished clearly between the consequences of a reduction of money wage rates in the face respectively of (i) *falling* and (ii) *fallen* money demand. Certainly he regards money wage reductions in the former situation as ineffective; and, since falling money wages may easily create an expectation of further falls, and so bring about further reductions in the money demand for labour, there is much force in his argument (p. 269). But what if the money demand for labour *has* fallen and is standing fairly stable at the new level? In that situation he does, indeed, deny that a reduction in money wage rates can bring about a reduction in real wage rates, and so in unemployment, in the way in which he supposes other people to believe that it can do these things. But he does not, I think, deny that in *some* way, by a process of repercussion, it can in fact do them. If I am interpreting him correctly, his conclusion, as distinct from his analysis, does not differ from what is commonly maintained. He allows that in the long period, if money wages are permitted to move freely, the various elements in the economic system tend so to adjust themselves that full employment, in his sense, is maintained.[1] It does not, of course, follow from this that, in a situation of maladjustment and consequent heavy unemployment, such as England experienced from 1925 to 1929, and France is experiencing now, it is better to cut the knot by reducing money wages rather than by pushing up prices through bank policy or, maybe, through devaluation. A strong case can be made for the latter course on the familiar grounds —mentioned by Mr. Keynes on pp. 267–9—(i) that it is extremely difficult in a democracy to secure a decisive and general cut in money wage rates and (ii) that, if this *were* accomplished, it would entail a burdensome enhancement in the real value alike of private and of State debts. Thus on this matter no head-on collision between Mr. Keynes and other people need occur.[2]

But it is unfortunately not possible to rest long on this note of agreement. For, though, if I am right, the results which Mr. Keynes and I forecast are the same, the processes by which we respectively look for them to be brought about are entirely different. He has failed, I think, to see that the consequences for employment of a given reduction in money wage rates, like the consequences of a given act of individual hoarding, are indeterminate until the character of the banking policy that is being pursued is known. It is possible to imagine a policy that would cause a fall in money wage rates to be associated with a rise in real wage rates and a *reduction* of employment. But policies which would have this effect, as also the policy that would keep real wage rates and employment unchanged, can be shown on analysis to be fantastically unlike any policy that has ever in fact been either pursued or advocated. With policies in any degree resembling actual policies, *a fortiori* with policies of income or price stabilisation, cuts in money wage rates *must* lower real wage rates and increase employment. Moreover, contrary to Mr. Keynes' view, the improved employment seems likely to be associated, ultimately at all events, if not at the beginning, with an *increased*, rather than with a reduced, money rate of interest.

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[1] In the course of his discussion Mr. Keynes suggests that those who hold that a reduction in money wage rates all round would increase employment all round infer this conclusion from the fact that a reduction in money wage rates in a single industry, rates elsewhere being unchanged, increases employment there (p. 259). But he provides no evidence that anybody has in fact ever perpetrated this gross fallacy.

[2] Paradoxical as it may seem at first sight, what has been said shows that there was a stronger case for reducing money wages in 1925 to 1929, when most people deprecated it, than in the depression years that followed, when that course was widely advocated and in a measure adopted.

VISION OF THE DAY OF JUDGMENT?

Mr. Keynes' vision of the day of judgment may be sketched out thus. If sensible policies are adopted, capital equipment will accumulate so rapidly that, within perhaps one generation, no openings will be left for investment that yield any positive net return (p. 220). People with substantial incomes will, therefore, have no inducement to invest. But they will not want to use all their incomes for consumption. Consequently, from sheer lack of opportunity to do anything else, they will hoard money. Since it is not feasible for the banks to lend at a negative rate of interest, they will not be able to induce investment as an offset to this. Consequently incomes, and with them employment, will contract in a cumulative manner, the process only coming to rest when " employment is low enough and the standard of life sufficiently miserable to bring savings to zero " (pp. 217–8). Apart from the special State activities, in which Mr. Keynes sees an effective prophylactic, is this a veridical vision or is it a nightmare?

If the immediate future is to resemble at all the recent past, new objects, the creation of which requires investment, are likely to be invented. An era that has witnessed the development of electrical apparatus, motor cars, aircraft, gramophones and wireless, to say nothing of tanks and other engines of war, is not one in which we can reasonably forecast a total disappearance of openings for new investment. Moreover, even if the situation should become such that the *average* of new capital assets yielded nothing, *some* capital assets would yield something and many would be expected to do so. Even if the prospective return were low, so long as it did not fall to nothing, it would pay a rich man to invest in these things rather than convert more and more income into completely sterile hoards. For, it must be remembered, the situation here contemplated is not one in which the prospective return from investment is, say, 2 per cent. now and is expected very shortly to improve. There is no expectation of improvement and, therefore, no inducement to hold resources liquid against a brighter future. For these reasons I am not greatly afraid of Mr. Keynes' cumulative débâcle. Furthermore, if it did arrive and moved at a moderate speed—to anticipate catastrophic movement is surely unreasonable—I should expect reductions in money wage rates to mitigate, though not to nullify, the associated damage to employment. Since, *ex hypothesi*, no investment would be taking place, actual wage reductions could not, by creating an expectation of future ones, hold investment up, and so would be more effective than they would be in ordinary slumps. This whole matter is highly speculative, but I should not myself pay a high premium to insure against Mr. Keynes' day of judgment!

ABOLITION OF UNEMPLOYMENT

There remains the last of the six themes scheduled for discussion on p. 122. Mr. Keynes holds that, by an appropriate interest policy on the part of the banks and an investment policy on the part of the State designed to defeat the day of judgment, it should be practicable to stabilise aggregate employment at the sort of level now considered appropriate to a boom. This, he thinks, would be accomplished if fluctuations about a moderate level of employment gave place to stability at the level of full employment as defined by him (p. 322). Whether or not we consider his hopes over-optimistic, few economists would deny that it should be practicable to come very much closer to full employment than we have recently been. Nor, I think, would there be any wide or deep disagreement about the general lines of appropriate short period policy on the part of the banks and of the State. But there is one important consideration, to which, concentrating attention, as he does, upon money, Mr. Keynes has, in my opinion, paid insufficient regard. His "full employment" means, in effect, such quantity of employment that no increase in it can be brought about by additions to effective money demand. He tacitly assumes that this full employment is equivalent, allowance being made for frictions and so on, to maximum possible employment, i.e. to the situation at the peak of a boom. But this need not be so. Wage earners may exercise a continuous pressure directed to keep rates of real wages above what is compatible with maximum possible employment. So far as they do this, enhancements in money demand for labour will not be able to raise employment permanently to the boom level, because they will be offset by rising money wages. Thus, even if Mr. Keynes' full employment were established, wage earners would still have a choice between policies that promote respectively higher real wage rates *plus* less employment and lower real wage rates *plus* more employment. It is not necessarily in their own interest, or even in the general interest,[1] that they should prefer the second type of policy. In any event, the choice belongs, neither to the banks nor to the State, but to them. If they opt for the first type of policy—and experience shows that they do opt for it to some extent—the establishment of full employment in Mr. Keynes' sense would not prevent the level of employment from being substantially less than that normal to a boom.

IV

I am painfully conscious that this notice consists almost entirely of adverse criticism—adverse on the manner and matter of Mr. Keynes' comments upon other people, adverse on the form and content of his own major contributions. It is small atonement, I fear, to have confessed, as I have done on p. 122, a doubt whether I have fully grasped his meaning, or to add, as I do here, that on many secondary matters he has, as everybody acquainted with his writings would expect, made illuminating and suggestive observations. His discussion of the precise relationship between wages and prime costs (Chapter VI), his development of Mr. Hawtrey's point about the consequences of payments to depreciation account in excess of what is contemporaneously spent on renewals and repairs (Chapter VIII), his description of the precarious character of business forecasts and of the consequences of experts in these matters being chiefly interested in short-run developments (Chapter XII), are all admirable. "The spectacle of modern investment markets has sometimes moved me towards the conclusion that to make the purchase of an investment permanent and indissoluble, like marriage, except by reason of death or other grave cause, might be a useful remedy for our contemporary evils" (p. 160). Admirable, too, is much of his "Notes on the Trade Cycle." Yet again, he has done good service to clarity by substituting new definitions of income and saving in place of those used in the *Treatise on Money*: while, by recognising (on p. 78) that Mr. Robertson's Hoarding, or excess of saving over investment, is equivalent to his own decrease of income, he has made it plain that in this field the matters still at issue have to do with verbal convenience rather than with fundamental principle. Finally, even those parts of his discussion which least command agreement are a strong stimulus to thought. We have watched an artist firing arrows at the moon. Whatever be thought of his marksmanship, we can all admire his virtuosity.

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[1] Cf. Rowe, *Wages in Practice and Theory*, Part III.

Marriage and Birth Seasons

By Sir William H. Beveridge

The existence of seasonal fluctuations in the marriage rate is well known. 'Unlike birth and death,' wrote William Farr in 1885, 'marriage is a voluntary act, and if men so will, all the marriages of a country may be celebrated in any single month of the year. But human will is influenced by motives, and these appear to operate all through the seasons of the year with variable force. In London the close of the season among the higher classes is a matrimonial epoch; among the working classes the festivals of Whitsuntide and Christmas, and the season of Lent exert some influence, so do the terms of service which vary in different countries. The geniality of spring is perceptible, but Lincolnshire is the only county in which the spring weddings exceed the autumn weddings in number. The accumulations of autumn supply a store of food and the harvest wages of young swains in agricultural districts are often wisely invested in the furniture of a cottage.'[1]

A little later than Farr, Sir Arthur Newsholme cited 'the Registrar-General's statistics' as showing that December, October, April and June were the most favoured months for marriages and that May was the least favoured month.[2] The only statistics of the Registrar-General that I have been able to discover on this point are in a table of his report for 1881 giving the number of marriages each month in two districts—Gloucestershire and Manchester—for comparison with the monthly figures of several countries in Europe.[3]

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[1] *Vital Statistics*, p. 76. Farr does not mention any authorities for this summary of marriage seasons, but in his reference to Lincolnshire he appears to be quoting a statement in the 27th Annual Report of the Registrar-General (for 1854) either directly or as quoted in the 44th Report (for 1881) to which reference is made in the following note. The reference to Lincolnshire is not accurate for the time when Farr wrote. My table shows spring marriages exceeding autumn marriages in Shropshire both during 1850–59 and during 1880–89; the same may be true of other counties—such as Herefordshire—which I have not examined.

[2] *Vital Statistics* (Edition of 1889), p. 46. The paragraph does not appear in the revised edition published in 1923.

[3] 44th Annual Report (1881), p. ix.

The figures for those two districts and for Scotland are as follows :—

MARRIAGES IN EACH MONTH PER 1,000 IN A YEAR

Month	Gloucestershire, 1881[1]	Manchester 1881[1]	Scotland, 1861–70
January	52	75	74
February	71	73	61
March	69	56	57
April	99	86	58
May	71	64	49
June	90	111	144
July	79	73	98
August	78	94	64
September	83	90	58
October	106	87	64
November	76	76	100
December	126	115	173

This table, it will be seen, shows the months in the order named by Sir Arthur Newsholme, in Gloucestershire, except that January and March are both lower than May. In Manchester the order is different.

More recently, Miss Dorothy Thomas extracted from unpublished records in the General Register Office quarterly statistics of marriages for all the separate counties of England and Wales from 1854 to 1913. She brought to light both the great variety of marriage seasons in different regions and the change that had followed on growing urbanisation of the country as a whole.[2]

The existence of seasonal fluctuation in the birth rate of England and Wales is as certain and obvious as the seasonal fluctuation of marriages. But it has attracted curiously little attention from vital statisticians. It is not mentioned either by Farr or Newsholme. It is mentioned briefly by Miss Thomas, who, at the end of her article on marriage seasons, gives quarterly birth rates for England and Wales at various epochs. She there suggests a possible relation between marriage and birth seasons, but does not examine the matter closely.

The object of this article is to present in as simple a form as possible some of the statistical data bearing on this matter, in the hope of stimulating further investigation. The data collected here relate respectively to

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[1] Easter Sunday fell on 17th April and Whitsunday on 5th June.

[2] "Changes in Marriage Seasons," by Dorothy S. Thomas, in ECONOMICA, Feb., 1924, p. 96.

(1) England and Wales as a whole since the War.
(2) England and Wales as a whole by decades from 1850 to the present time.
(3) The general birth rate in selected counties in 1850–59, 1880–89 and 1922–35.
(4) Illegitimate births in the same counties at two of these epochs.
(5) Marriages and births in certain districts smaller than counties in 1922–35.
(6) Still-births in 1927–35.

I

England and Wales as a Whole Since the War

For England and Wales, as a whole, since the War, the broad facts of seasonal fluctuation, in marriages and in births, are set out in Tables I and II below. The first of these tables is a transcript of the published quarterly returns of the Registrar-General, giving the marriages and births per 1,000 of the total population, from 1922 to 1935. In the second table the quarterly rates in each year are shown as percentages of the rate for the whole year. The 'winter quarter' means the three months ending 31st March, and 'spring,' 'summer' and 'autumn' quarters mean the three monthly periods ending on 30th June, 30th September and 31st December respectively.

The seasonal variations shown are remarkably regular. In each of the fourteen years included marriages are highest in the summer quarter (from 118.3 to 128.9 per cent. of the mean for the year) and are lowest in the winter quarter (56.5 to 81.9 per cent. of the year). In most years—ten out of the fourteen—the spring quarter stands second, with percentages ranging from 107.9 to 112.9; in four years, the percentage falling in this quarter is lower than usual —ranging from 90.3 to 103.1—and second place is taken by the autumn quarter, which, as a rule, comes third.

This occasional irregularity of marriage seasons, as shown in the quarterly table, has a simple explanation. Each of the four years—1923, 1929, 1932, 1934—in which autumn marriages exceed spring marriages has an early Easter, with Easter Saturday falling into March, and a relatively

TABLE I

QUARTERLY MARRIAGE AND BIRTH RATES PER 1,000 POPULATION

England and Wales, 1922–1935

	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
Quarter ending last day of							Marriages							
March (Winter)	10·7	11·3	9·7	9·6	9·6	9·9	9·2	11·1	9·9	9·4	12·5	8·9	11·8	10·2
June (Spring)	17·4	15·7	16·8	16·9	16·1	17·3	17·3	15·3	17·8	17·1	13·8	17·0	16·8	19·3
September (Summer)	18·7	18·0	18·4	18·4	17·0	18·6	19·0	20·2	19·6	19·7	18·8	20·3	21·4	21·5
December (Autumn)	15·9	15·9	16·0	15·7	14·5	16·9	15·9	16·6	15·9	16·0	16·0	16·8	17·5	17·4
							Births							
March (Winter)	22·1	20·4	19·2	18·3	18·1	17·2	17·1	16·4	16·2	16·2	15·2	14·9	15·0	14·6
June (Spring)	21·1	20·5	19·4	19·3	18·6	17·4	17·4	17·2	17·1	16·4	16·5	15·3	15·5	15·4
September (Summer)	20·3	19·6	19·1	18·6	17·8	16·5	16·7	16·4	16·5	16·0	15·5	14·5	14·8	15·2
December (Autumn)	18·3	18·4	17·5	17·0	16·7	15·4	15·7	15·1	15·4	14·8	13·9	12·8	14·0	13·8

TABLE II

QUARTERLY MARRIAGE AND BIRTH RATES AS PERCENTAGE OF ANNUAL RATES

England and Wales, 1922–1935

	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
Date of Easter Sunday ..	Apr. 18	Apr. 1	Apr. 20	Apr. 12	Apr. 4	Apr. 17	Apr. 8	Mar. 31	Apr. 20	Apr. 5	Mar. 27	Apr. 16	Apr. 1	Apr. 21
						Marriages								
Quarter ending last day of														
March (Winter)	68·3	74·2	63·7	63·4	67·1	63·2	60·0	70·3	62·7	60·4	81·9	56·5	69·9	59·7
June (Spring)	111·0	103·1	110·3	111·6	112·6	110·4	112·7	96·8	112·6	110·0	90·3	107·9	99·6	112·9
September (Summer)	119·3	118·3	120·9	121·4	118·9	118·6	123·8	127·8	124·1	126·7	123·1	128·9	126·8	125·7
December (Autumn)	101·4	104·4	105·1	103·6	101·4	107·8	103·5	105·1	100·6	102·9	104·7	106·7	103·7	101·7
						Births								
March (Winter)	108·1	103·4	102·1	100·0	101·7	103·4	102·2	100·8	99·4	102·2	99·5	103·6	101·2	99·0
June (Spring)	103·2	103·9	103·2	105·5	104·5	104·7	104·0	105·7	104·9	103·5	108·0	106·4	104·6	104·4
September (Summer)	99·2	99·4	101·6	101·6	100·0	99·2	99·9	100·7	101·2	100·9	101·5	100·9	99·8	103·0
December (Autumn)	89·5	93·3	93·1	92·9	93·8	92·7	93·9	92·8	94·5	93·4	91·0	89·1	94·4	93·6

high proportion of marriages falling in the winter quarter. In these years marriages celebrated at Easter are transferred from spring to winter; there are enough of these holiday marriages to affect materially the quarterly returns. An interesting feature about the table is that this transference does not show itself when Easter Sunday falls on April 5th or 4th. For most people, holidays and the convenient time for marriage are narrowly circumscribed. It is a highly probable inference that the reason why marriages are most numerous in summer is that this is now the holiday season for urbanised England, and that the actual peak of marriages is near the beginning of August. The seasonal fluctuation of marriages in the period 1922–35 is presented accordingly in Table III in two sections. The first column gives the mean of the quarterly percentages for the four years in which Easter Sunday falls on or before 1st April; the second column is based on the other nine years when Easter comes later.

The seasonal fluctuation of births shown in the lower half of Table II, though less marked than the marriage fluctuation, and with a different phase, is nearly as regular. In every year, except 1922, which is still disturbed by the aftermath of demobilisation, births are highest in the spring quarter and lowest in autumn. In most years winter stands second; in four years out of the fourteen (1925, 1930, 1932 and 1935) summer has more births than winter.

There is no obvious explanation of this minor irregularity in the quarterly distribution of births, as there is of the occasional irregularity of the marriage season. The movements of Easter, though they may involve a transference of marriages from one quarter to the next, could hardly be expected to make—and do not in fact make—an appreciable change in the quarterly distribution of births. To test this, the quarterly birth rates from autumn, 1922 to summer, 1934 have been grouped, not in calendar years, but in twelve-monthly periods beginning with autumn (1st October) and the rate for each quarter has been expressed as a percentage of the mean of the four rates in the twelve-monthly period. The mean quarterly percentages for the four periods beginning in the autumns of 1923, 1929, 1932, 1934 (after an early Easter) are shown in column 3 of Table III; the mean percentages for the other nine periods are shown in column 4. It will be seen that the autumn births are a little higher and winter births a little lower in column 3

TABLE III

SEASONAL FLUCTUATION OF MARRIAGE AND BIRTH RATES, England and Wales, 1922–1935

Quarter	Quarterly Marriage Rate as percentage of rate for calendar year 1922–1935		Quarterly Birth Rate as percentage of rate for twelve-monthly period beginning 1st October 1922 (4)–1935 (3)	
	Mean percentage for 4 years with early Easter[1] (1)	Mean percentage for other 10 years (2)	Mean percentage for 4 periods following early Easter (3)	Mean percentage for other 9 periods (4)
Winter	74·1	62·5	100·3	101·2
Spring	97·4	111·2	104·0	104·5
Summer	124·0	122·9	101·0	99·9
Autumn	104·5	103·4	94·7	94·4

than in column 4, suggesting the transference of a few conceptions from spring to winter. But the difference is slight and the movements in individual twelve-monthly periods are discrepant. As will be shown below, the influence of Easter on marriages is more marked since the war than at any earlier period. Since even now the movements of Easter have so little effect on the quarterly distribution of births, the date of Easter can safely be ignored in calculating quarterly means of births over a period of years; it cannot be ignored for marriages.

The normal seasonal fluctuation of births, it will be seen, is in natural step with the marriage fluctuation, that is to say, all its phases run regularly three quarters later. Bearing it in mind that, owing to Easter and August holidays, the spring and summer marriages probably fall predominantly in the first month or at least in the first half of the quarter, the phases of the seasonal movement of births are those that we should expect if a substantial proportion of marriages led to a birth in the ninth or tenth month after marriage.

The lesser range of the birth fluctuation is also what should be expected on this assumption. First births are only a proportion of all births in a marriage,[2] while a large proportion of first births would fall into quarters other than the third quarter following the marriage. The relative phases and ranges of the seasonal marriage and birth fluctuations suggest a direct connection between the two, but cannot, without further enquiry, be taken as proving it.

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[1] 1923, 1929, 1932, 1934.

[2] In Scotland of all children born to marriages subsisting in 1911 21·6 per cent. only were first-born children. This would include marriages of long duration going back to the periods of high fertility in the 19th century. The present proportion of first births would be a great deal higher, but I do not know of any direct measure of this proportion. An indirect indication is afforded by the fact that the cost of paying 1s. a week as unemployment benefit to every dependent child (up to 14) is almost exactly twice the cost of paying 1s. a week to the first child only. That is to say, those unemployed men entitled to benefit who have any dependent children at all have, on an average, only two such children. The average number of dependent children is a little higher among men who draw assistance rather than benefit, as the former include a large proportion of coal-miners with relatively high fertility.

It does not seem possible, for instance, to connect an exceptionally large number of marriages in some particular quarter (e.g. 1929 summer or 1930 spring) with exceptionally large birth rates in the corresponding quarters nine months later (i.e. 1930 spring or 1931 winter). Equally difficult is it to find a connection between particular quarters of minimum marriage and the corresponding quarters for births. And the unfortunate variability of Easter makes it difficult to prepare any series of quarterly figures for systematic comparison of marriages and births, so as to test the degree of their correlation at different intervals. Occasional early Easters are a nuisance to statisticians, as well as to holiday-makers.

Yearly marriage and birth rates are free from this source of disturbance, but, in the period since the war, are affected by markedly different trends. The yearly marriage rate, since 1922, has fluctuated with an upward tendency—if it has any tendency at all. The fluctuations of the yearly birth rate have been dominated by secular decline. Comparison of the two series, nevertheless, suggests that there is a connection between them, with births a year behind. A marked rise of marriages, as at 1926–27 or 1928–29, tends to be followed by a small rise of births or by a break in their fall at 1927–28 or 1929–30; a marked decline of marriages makes the fall of births more precipitate. In Table IV this possible connection shows itself in the last two columns, giving the second differences of the figures in the first two columns.

This result, again, is suggestive rather than conclusive, but is interesting by contrast with the relations established by Mr. Yule between the marriage and birth rates of the 19th century. For the period 1850–96, he found a correlation between marriages and births two years later a good deal closer than that between marriages and births of one year later; he placed the interval of maximum correlation at two years and two months.[1] The connection, if any, since the war, is at an interval of one year, rather than two years. This difference is what might be expected; with the falling birth rate, first births are a larger proportion of the whole number of births. The table suggests that a substantial proportion of first births come round about a year after marriage, so that the birth rate is influenced by the marriage rate at that interval.

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[1] *Royal Statistical Journal*, 1906, p. 123.

TABLE IV

MARRIAGE AND BIRTH RATES—England and Wales, 1922–35

(Births for one year later than marriages)

Year of marriage	Rate per 1,000 of population		First differences		Second differences	
	Marriages	Births	Marriages	Births	Marriages	Births
1922	15·7	19·7				
1923	15·2	18·8	− 5	− 9		
1924	15·3	18·3	+1	− 5	+6	+4
1925	15·2	17·8	− 1	− 5	− 2	0
1926	14·3	16·6	− 9	−12	− 8	− 7
1927	15·7	16·7	+14	+1	+23	+13
1928	15·4	16·3	− 3	− 4	−17	− 5
1929	15·8	16·3	+4	0	+7	+4
1930	15·8	15·8	0	− 5	− 4	− 5
1931	15·6	15·3	− 2	− 5	− 2	0
1932	15·3	14·4	− 3	− 9	− 1	− 4
1933	15·8	14·8	+5	+4	+8	+13
1934	16·9	14·8	+11	0	+6	− 4

2

ENGLAND AND WALES 1850 TO 1935

In Tables V and VI, the quarterly fluctuations of marriage and birth rates in England and Wales are shown for six decades from 1850 to 1909 and in the period 1922 to 1935, by expressing the figure for each quarter as a percentage of the figure for the calendar year. For marriages, years with early Easters, that is to say, with Easter Sunday falling on or before 1st April, are shown separately from other years; the bracketed numbers following the decade dates are the numbers of years in each period not having early Easters. For births, as has been explained, there is no need to make this distinction; the figures relate to all years in each period.

Table V

SEASONAL VARIATION OF MARRIAGE RATES—England and Wales.

(Mean rate for each quarter as percentage of mean rate for year)

	Years with early Easter omitted				Years with early Easter			
	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn
1850–59 (7)	83·5	101·9	96·0	118·6	84·4	100·3	97·3	118·0
1860–69 (6)	83·1	101·6	96·9	118·4	83·9	101·2	97·8	117·1
1870–79 (7)	81·4	103·5	96·8	118·3	83·2	99·6	98·0	119·2
1880–89 (7)	79·3	104·4	99·0	117·3	84·4	97·1	100·1	118·4
1890–99 (8)	72·4	109·0	105·1	113·5	86·8	94·1	104·2	114·9
1900–09 (8)	69·9	111·3	110·7	108·1	80·9	98·5	111·1	109·5
1922–35 (10)	62·5	111·2	122·9	103·4	74·1	97·4	124·0	104·5

Table VI

SEASONAL VARIATION OF BIRTH RATES—England and Wales

(Mean rate for each quarter as percentage of mean rate for year)

	Winter	Spring	Summer	Autumn
1850–59 ..	104·5	104·5	96·2	94·8
1860–69 ..	104·3	103·1	96·6	96·0
1870–79 ..	103·7	101·5	97·3	97·5
1880–89 ..	102·3	102·6	98·0	97·1
1890–99 ..	102·2	101·8	99·5	96·5
1900–09 ..	102·2	102·2	100·3	95·3
1922–35 ..	101·9	104·8	100·6	92·7

Table V brings out clearly the change of marriage seasons in England and Wales as a whole, to which attention was first called by Miss Dorothy Thomas. At the beginning of the period under review, in the decade 1850–59, there is a marked maximum of marriages in autumn, with spring second, summer third, and winter a good way behind. There is no substantial change in the next two decades, but from 1880–89 onwards autumn marriages decline, while those of spring and summer increase, with summer gaining rapidly on spring after the turn of the century. Miss Dorothy Thomas' figures for the years 1901–1913 (including years with early Easter) showed summer marriages just exceeding spring marriages; in my Table V, the last pre-war decade 1900–09, without early Easters, shows spring still leading summer by a trifle. In the period since the war summer has gone right ahead. The proportion of winter marriages declines throughout, at first slowly and then more rapidly.

Comparison of the two sets of figures for marriages shows the influence of Easter on the distribution of marriages as being slight at first, but increasing rapidly from 1880–89 onwards. In the post-war period, a winter quarter which includes Easter Saturday has nearly one-fifth more marriages than one without Easter—74.1 per cent. of the mean rate for the year in place of 62.5 per cent. This comparison shows, also, that the increase of spring marriages from beginning to end of the period is due entirely to the growing use of Easter as a wedding occasion: apart from Easter, spring has a smaller proportion of the year's marriages now than it did in the middle of the 19th century.

Table VI shows that birth seasons as well as marriage seasons have changed since the middle of the 19th century. In the first three decades shown, from 1850 to 1879, winter had as a rule more births than any other quarter, though only just more than spring, while summer and autumn were behind and close together. Now spring leads winter; and autumn, falling from 1880–89 onwards while summer rises, is well behind all other quarters.

It will be seen, at once, that the relation of marriage and birth seasons in the 19th century is not in the least like the relation found since the war, with births following marriages three quarters later. In the 19th century, births occur predominantly in winter or spring, in the quarters immediately following the peak of marriages in the autumn. It will be best to postpone any attempt to interpret this statistical result till the separate data for different districts have been examined.

3

Selected Counties of England and Wales

As was shown by Miss Thomas, the change of marriage seasons in England and Wales, as a whole, represents in part a real change of marrying habits in one and the same district, and in part a change in the distribution of population, as between rural and urban pursuits. She classified the counties of England and Wales according to their marriage seasons in four main groups.

I. Having throughout a marked maximum in autumn, a marked minimum in winter and spring generally higher than summer. (Normal Agricultural Type.)

II. Having a maximum in spring with autumn as a second maximum. (Special Agricultural and Mining Type.)

III. Having a marked summer maximum at end of the period, often preceded by an autumn maximum at the beginning. (Normal Urban Type.)

IV. Having at the end of the period spring, summer, and autumn at about the same level, preceded usually by a 'normal agricultural' season at the beginning of the period. (Changing Type.)

Following this classification, I have prepared marriage and birth statistics for two or three counties in each of Miss Thomas' groups, for the decades 1850–59, and 1880–89, and the post-war period 1922–35. These are set out in Tables VII to X and the accompanying charts, though I have changed Miss Thomas' order, putting first as my group A her group III, and then her groups I, II and IV. I have also transferred Cheshire, which she groups with London and Middlesex as of normal urban type, to the last group, as of changing type. I have to thank the Registrar-General for permission to extract the figures for the post-war period, for these and later tables, from his unpublished records and for access to the General Register Office Library.

Table VII gives the mean of the quarterly marriage rates in each period, omitting the years with early Easter, and Table VIII expresses these quarterly means as percentages of the mean for the four quarters. Tables IX and X give similar information for birth rates, including all years in each period. The charts represent the percentages in Tables VIII and X.

The following features call for comment:—

(1) The broad similarity of birth seasons in all districts since the war and their striking differences eighty years ago. In 1922–35 every district shows a maximum of births in spring (though not as a rule a marked maximum) and shows a minimum in autumn. In 1850–59 births have a well-marked spring maximum and an autumn minimum in Wilts, Durham, Shropshire, Cheshire, and West Riding; in London, Middlesex and Norfolk the maximum falls in winter and the minimum in summer; Gloucestershire has a winter maximum and autumn minimum.

Table VII

QUARTERLY MARRIAGE RATES PER 1,000 POPULATION in Certain Counties and Periods

(Omitting early Easter years)

	1850–59				1880–89				1922–34			
	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn
London	16·6	21·2	22·3	22·1	13·2	18·2	19·0	19·9	11·6	19·3	23·2	18·9
Middlesex	7·4	10·2	12·5	11·8	7·6	11·6	12·7	12·5	8·4	16·5	21·3	15·5
Cheshire	13·9	15·6	16·3	18·7	11·5	13·9	14·0	14·7	8·4	15·3	18·3	12·8
Norfolk	12·1	12·8	11·9	23·9	9·8	12·1	11·5	21·0	9·5	14·6	15·1	18·5
Wilts	9·9	14·8	12·5	17·7	9·1	12·8	11·9	16·2	8·4	16·2	16·4	15·7
Shropshire	11·5	16·2	12·2	15·5	10·0	13·7	10·8	12·8	10·5	18·0	16·9	16·0
Durham	15·7	18·8	16·1	19·9	13·8	16·4	14·7	16·9	10·8	16·6	16·7	15·1
West Riding	15·3	17·6	17·5	20·7	12·5	15·6	15·4	18·1	9·3	18·2	19·0	16·0
Gloucestershire ..	14·2	18·1	17·5	22·0	11·5	15·3	14·1	18·6	8·0	15·9	17·8	13·7

Table VIII

QUARTERLY MARRIAGE RATES AS PER CENT. OF MEAN FOR YEAR

	1850–59				1880–89				1922–34			
	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn
London	80·8	103·2	108·5	107·5	75·1	103·5	108·1	113·3	63·6	105·7	127·1	103·6
Middlesex	70·6	97·4	119·3	112·7	68·5	104·5	114·4	112·6	54·4	107·0	138·1	100·5
Cheshire	86·2	96·8	101·1	115·9	85·0	102·8	103·5	108·7	61·3	111·7	133·6	93·4
Norfolk	79·7	84·4	78·4	157·5	72·1	88·9	84·6	154·4	65·9	101·2	104·7	128·2
Wilts	72·1	107·8	91·1	129·0	72·8	102·4	95·2	129·6	59·3	114·3	115·7	110·7
Shropshire	83·0	117·0	88·1	111·9	84·6	115·9	91·3	108·2	68·4	117·3	110·1	104·2
Durham	89·1	106·7	91·3	112·9	89·3	106·1	95·2	109·4	73·0	112·2	112·8	102·0
West Riding	86·1	99·0	98·5	116·4	81·2	101·3	100·0	117·5	59·5	116·5	121·6	102·4
Gloucestershire ..	79·1	100·8	97·5	122·6	77·3	102·9	94·8	125·0	57·8	114·8	128·5	98·9

TABLE IX

QUARTERLY BIRTH RATES PER 1,000 POPULATION in Certain Counties and Periods

(All years)

	1850–59				1880–89				1922(4)–1935(3)			
	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn
London	35·0	33·4	32·5	33·4	35·4	33·4	32·7	33·3	16·2	16·6	16·0	15·3
Middlesex	30·7	29·3	28·9	30·0	33·8	33·2	32·6	33·1	15·6	16·5	16·3	15·1
Cheshire	35·0	37·9	33·5	31·6	32·3	33·5	31·9	31·0	15·4	16·3	15·6	14·6
Norfolk	33·9	33·8	30·1	30·2	31·8	31·8	29·8	30·0	16·0	16·6	16·3	15·3
Wilts	32·4	32·9	30·7	29·8	30·4	30·4	29·3	28·9	15·4	16·2	16·1	14·9
Shropshire	30·4	32·1	28·7	27·8	28·4	30·3	28·8	27·5	16·7	17·7	17·5	16·0
Durham	39·5	42·3	40·7	39·3	37·1	40·4	38·3	36·9	21·4	22·2	20·9	20·0
West Riding	37·7	39·8	37·7	36·3	32·9	33·8	32·7	32·7	16·8	17·3	16·7	16·1
Gloucestershire ..	32·5	31·8	30·0	29·7	31·0	30·9	29·1	28·5	15·6	16·5	16·1	14·9

TABLE X

QUARTERLY BIRTH RATES AS PER CENT. OF MEAN FOR YEAR

	1850–59				1880–89				1922(4)–1935(3)			
	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn
London	104·2	99·5	96·8	99·5	105·0	99·1	97·1	98·8	101·1	103·6	99·8	95·5
Middlesex	103·3	98·6	97·2	100·9	101·9	100·0	98·3	99·8	98·3	103·9	102·7	95·1
Cheshire	101·4	109·9	97·1	91·6	100·4	104·1	99·1	96·4	99·5	105·3	100·8	94·4
Norfolk	105·9	105·6	94·1	94·4	103·1	103·1	96·6	97·2	99·7	103·4	101·6	95·3
Wilts	103·0	104·6	97·6	94·8	102·2	102·2	98·5	97·1	98·4	103·5	102·9	95·2
Shropshire	102·2	107·9	96·5	93·4	98·8	105·4	100·2	95·6	98·4	104·3	103·1	94·2
Durham	97·6	104·6	100·6	97·2	97·2	105·8	100·3	96·7	101·3	105·1	98·9	94·7
West Riding	99·5	105·2	99·5	95·8	99·6	102·4	99·0	99·0	100·4	103·4	99·9	96·3
Gloucestershire ..	104·8	102·6	96·8	95·8	103·8	103·4	97·4	95·4	98·9	104·6	102·0	94·5

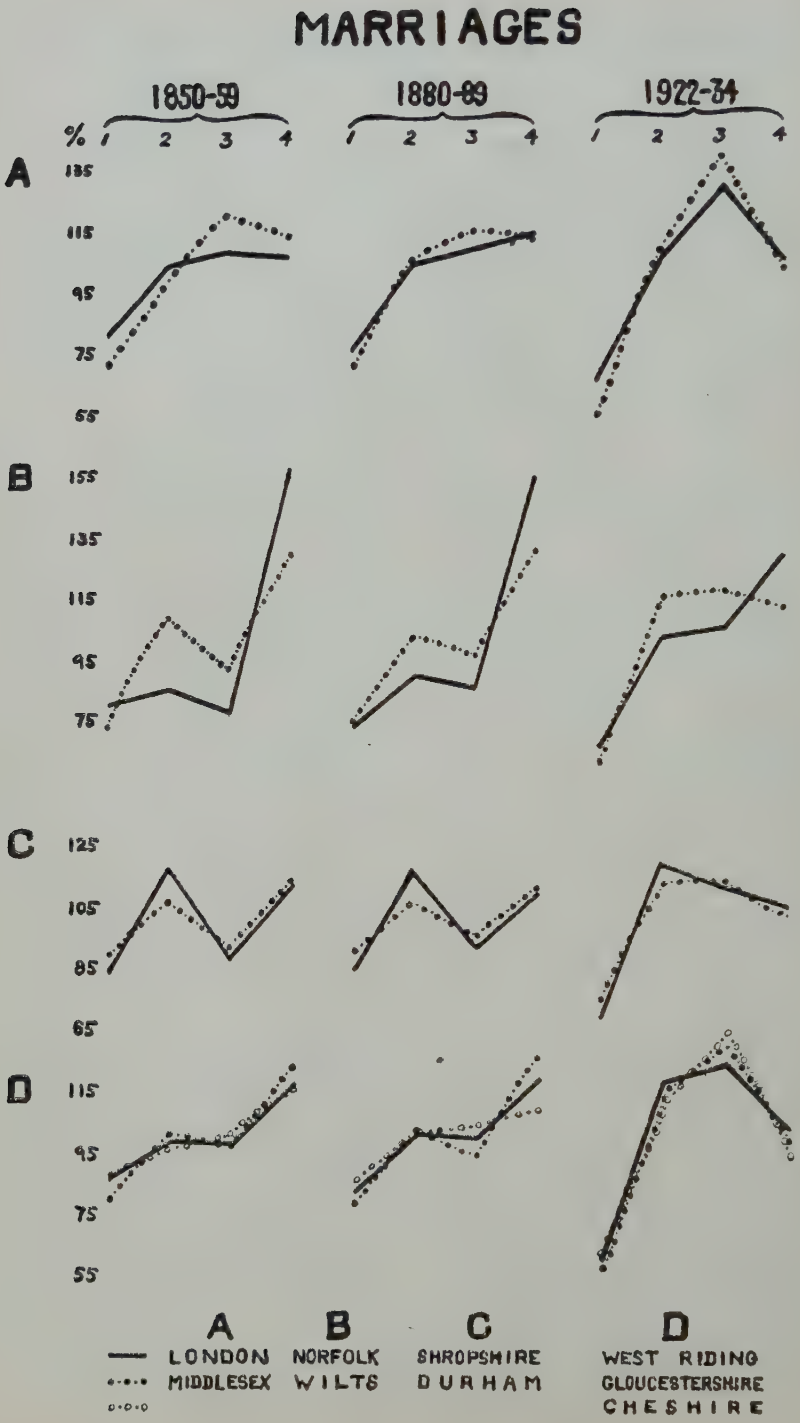
(2) As involved in this change from diversity to similarity, the notable changes of birth seasons in certain districts. In London and Middlesex, the relative positions of winter and autumn on the one hand and spring and summer on the other hand have been reversed in the past eighty years. In West Riding and Cheshire a marked spring maximum has faded to insignificance. In Gloucestershire, winter has passed from having most births to third place, after spring and summer. In Norfolk and Wilts summer has risen relatively to all quarters. Shropshire and Durham show both the relative decline of the spring maximum that marks the West Riding, and the rise of summer that marks Norfolk and Wilts.

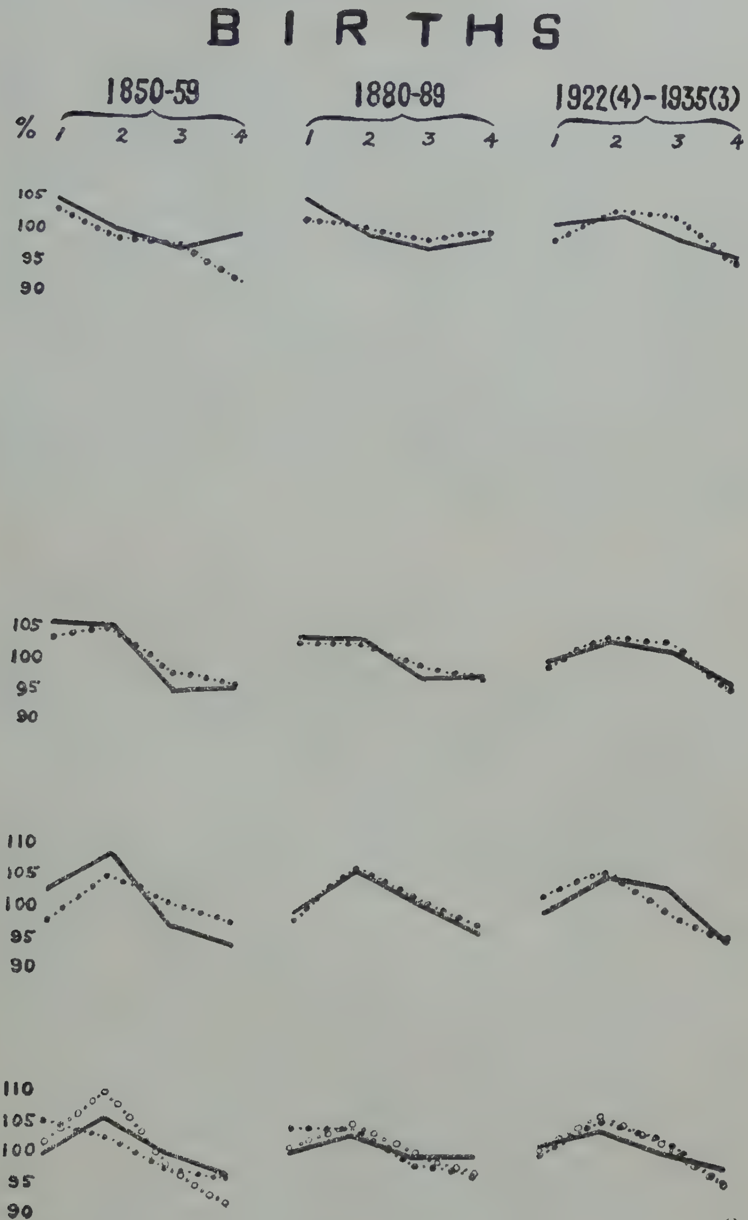
(3) The absence in the 19th century in every district of any uniform natural relation between the phases of marriage and birth seasons, such as appears since the war in most counties.

In 1850–59, in all the selected counties, other than London, Middlesex and Shropshire, the marriage maximum falls in the autumn quarter; the maximum of births falls, not three quarters later in summer, but either one quarter after, in winter (Gloucestershire and Norfolk), or at two quarters' distance in spring (Wilts, Durham, Cheshire, West Riding). In two of these districts, with a spring maximum of births, namely Wilts and Cheshire, as also in Shropshire, winter, just after the peak of marriages, comes second to spring. Summer—which is the third quarter following the marriage maximum—has in nearly all these districts a relatively small proportion of births, and autumn which is the fourth quarter following the marriage maximum has hardly more births than summer in any district and sometimes has fewer.

In London and Middlesex in 1850–59, the marriage maximum is in summer with autumn close behind; the birth maximum is two quarters away, in winter. Summer, following three and four quarters after the two busiest marriage seasons, has fewest births, and autumn following three quarters after the marked marriage minimum in winter has more births than any quarter, except winter. The phase relations suggested by the post-war figures are almost completely reversed.

In Shropshire, spring marriages just exceed the autumn marriages, and the birth maximum in spring is four or


MARRIAGES
1850-59
1880-89
1922-34
%
1
2
3
4
A
135
115
95
75
65
B
155
135
115
95
75
C
125
105
85
65
D
115
95
75
55
A
B
C
D
LONDON
NORFOLK
SHROPSHIRE
WEST RIDING
MIDDLESEX
WILTS
DURHAM
GLOUCESTERSHIRE
CHESHIRE


BIRTHS
1850-59
1880-89
1922(4)-1935(3)
%
1
2
3
4
105
100
95
90
110

two quarters away from these peaks. Winter, three quarters away from the marriage maximum, comes second for births—the nearest approach in this period to a normal phase relation.

The graphs for the intervening period 1880–89, while in most cases they show the beginning of a transition, show also in nearly all cases much greater resemblance to the graphs of 1850–59 than to those of 1922–35. Marriage seasons in particular present little change between the two earlier epochs; the most marked change is in an unexpected direction—making autumn the busiest quarter for marriages in London. In respect of births, perhaps the most marked change is the lowering of the spring maximum in the West Riding (where marriage seasons are practically unaltered) and in Cheshire; there is considerable flattening out of the seasonal movement of births in the agricultural counties of Norfolk and Wilts, with no marked change of marriage seasons.

4

ILLEGITIMATE BIRTHS IN RELATION TO LEGITIMATE BIRTHS

Table XI compares the quarterly distribution of illegitimate births with that of legitimate births in 1850–59 and 1922–35, and shows also for each quarter the proportion of illegitimate to total births. This table is based on actual numbers of births, not on rates.

Looking first at the post-war period 1922–35, we see that in England and Wales, as a whole, the general course of seasonal fluctuation in illegitimate births is the same as that for legitimate births, with spring maximum, autumn minimum and winter and summer nearly equal. The range of fluctuation is greater for illegitimate births—spring being a more marked maximum and autumn a more marked minimum. This is reflected in the lower part of the table—showing the illegitimate births as a percentage of all births. This percentage also has a regular seasonal variation, being highest in spring and lowest in winter.

General agreement between the seasonal course of legitimate births and of illegitimate births, with greater range of fluctuation in the latter, is found repeated in the figures for nearly all the separate counties shown in the table. In all cases illegitimate births are at a minimum in autumn;

in all cases, except Norfolk, they are at a maximum in spring; and in all cases the range from minimum to maximum is appreciably greater than with all births. In Norfolk on the average of 1922–35 summer has slightly more illegitimate births than spring, but the relative positions vary from year to year and the total figures are small.

In the decade 1850–59, if England and Wales be taken as a whole, there is not the same agreement as since the war, between the seasonal movements of illegitimate births and of legitimate births. The maximum for illegitimate births falls in winter and for legitimate births in spring; the minimum for illegitimate births falls in summer in place of autumn as for legitimate births, though the differences are small. And three of the eight counties examined—Durham, Shropshire and the West Riding—show marked discrepancies between the two movements. In all three districts illegitimate births are at a maximum in summer, and legitimate births are at a maximum in spring, when in two of the counties—Durham and Shropshire—illegitimate births are at a minimum.

On the other hand, all the other counties show an agreement between the seasonal course of illegitimate births and legitimate births, which is the more notable because the phases in the different counties are quite different. In nearly all these counties, also, the experience of the post-war period is reproduced, in the sense that the range of fluctuation is greater for illegitimate births. There is by consequence a seasonal variation in the proportion of illegitimate births to all births; the proportion is highest as a rule in the quarters of most births and lowest when births are fewest.

Table XI illustrates from another angle the growing uniformity in the social and vital conditions of different parts of the country. In 1850–59 there are wide variations in the proportion of illegitimate births to all births, from just over 4 per cent. in London to over 10 per cent. in Norfolk. In 1922–34 the proportion is just about 4 per cent. in all but two of the districts examined and is about 6 per cent. in those two. In this respect, also as in respect of birth and to a less extent marriage seasons, growing urbanisation and inter-communication have tended to level local differences and beat into one mould the social habits of the whole people.

TABLE XI

LEGITIMATE AND ILLEGITIMATE BIRTHS

	1850–59				1922(4)–1935(3)			
	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn
	Quarterly Percentage Distribution.							
London—								
Legitimate ..	26·0	24·9	24·2	24·9	25·3	25·7	25·0	24·0
Illegitimate ..	27·0	24·6	23·7	24·7	26·1	26·7	24·8	22·4
Middlesex—								
Legitimate ..	25·8	24·7	24·3	25·2	24·6	26·1	26·0	23·3
Illegitimate ..	26·9	24·4	23·4	25·3	25·8	27·2	25·0	22·0
Cheshire—								
Legitimate ..	25·3	27·6	24·2	22·9	24·9	26·4	25·2	23·5
Illegitimate ..	25·6	25·9	25·3	23·2	25·3	26·5	25·4	22·8
Norfolk—								
Legitimate ..	26·3	26·4	23·7	23·6	24·9	25·8	25·4	23·9
Illegitimate ..	28·3	26·4	21·9	23·4	24·4	26·3	26·6	22·7
Wilts—								
Legitimate ..	25·7	26·1	24·4	23·8	24·6	25·8	25·8	23·8
Illegitimate ..	26·0	26·2	24·5	23·3	24·5	27·5	25·5	22·5
Shropshire—								
Legitimate ..	25·6	27·3	23·9	23·2	24·6	26·1	25·8	23·5
Illegitimate ..	25·8	24·1	25·8	24·3	24·1	26·5	25·6	23·8
Durham—								
Legitimate ..	24·4	26·3	25·1	24·2	25·3	26·2	24·7	23·8
Illegitimate ..	24·7	23·6	25·9	25·8	24·8	26·3	25·7	23·2
West Riding—								
Legitimate ..	24·9	26·4	24·8	23·9	25·2	25·8	25·0	24·0
Illegitimate ..	24·6	25·2	25·6	24·6	25·1	26·5	25·2	23·2
Gloucestershire—								
Legitimate ..	26·1	25·6	24·3	24·0	24·7	26·1	25·5	23·7
Illegitimate ..	27·8	25·9	22·4	23·9	24·8	27·1	25·9	22·2
England and Wales—								
Legitimate ..	25·6	26·1	24·3	24·0	25·0	26·0	25·2	23·8
Illegitimate ..	26·4	25·4	24·0	24·2	25·2	26·8	25·4	22·6
	Illegitimate Births as Percentage of Total Births							
London	4·24	4·06	4·03	4·07	4·92	4·95	4·73	4·45
Middlesex	5·05	4·79	4·67	4·88	3·95	3·93	3·64	3·58
Cheshire	8·18	7·67	8·45	8·22	3·99	3·94	3·96	3·81
Norfolk	11·33	10·61	9·87	10·52	5·58	5·79	5·97	5·45
Wilts	7·20	7·13	7·14	7·02	4·39	4·70	4·37	4·18
Shropshire	9·73	8·62	10·34	10·05	6·21	6·42	6·27	6·39
Durham	5·69	5·08	5·80	5·98	3·74	3·83	3·97	3·73
West Riding ..	6·70	6·51	6·99	6·98	4·36	4·48	4·41	4·24
Gloucestershire ..	6·14	5·82	5·35	5·76	3·81	3·95	3·86	3·58
England and Wales	6·76	6·42	6·51	6·63	4·37	4·46	4·35	4·13

In comparing the proportion of illegitimate to all births at different times it is necessary, of course, to remember the changes in the birth rate and therefore in the proportion of first births to all births. The proportion of illegitimate births to all births is higher in London now than it was eighty years ago, but the proportion of illegitimate births to first births is much less. In all the other districts illegitimate births have fallen relatively to all births and still more in relation to first births.

5

Certain Areas Smaller than Counties

The separate counties shown as a whole in Tables VII to X and the accompanying charts are themselves composites, comprising areas of widely differing social conditions. Even the most rural of these counties—Norfolk and Wilts—have large urban populations. The most urban of them—London—comprises districts of sharply contrasted wealth and poverty.

It is unfortunately no easy task to break up the county areas into smaller units distinguishing town and country. In the records of the Registrar-General births can be found separately for county boroughs, urban districts and rural districts, but marriages are given separately only for registration districts which may or may not coincide with county boroughs. It may be of interest, however, to give illustrative figures for three of the counties and for some of the London boroughs in the period 1922–35.

In Table XII the births during the period in Wilts, Gloucestershire and Norfolk are given separately for districts which are mainly urban or mainly rural in character. The spring maximum is more marked in the towns than in the country districts. But the main interest of the table lies in the similarity of the seasons in all districts.

Table XII

WILTS, GLOUCESTERSHIRE, AND NORFOLK: QUARTERLY DISTRIBUTION OF BIRTHS IN TOWN AND COUNTRY 1922(4)–1935(3)

	Total Births in period	Percentage of Total Births falling in			
		Winter	Spring	Summer	Autumn
Wilts—					
Urban Districts ..	26,931	24·6	26·3	25·6	23·5
Rural Districts ..	35,199	24·6	25·6	25·8	24·0
Gloucestershire—					
Bristol C.B.	82,081	24·7	26·3	25·5	23·5
Gloucester C.B. ..	11,784	24·9	26·0	25·0	24·1
Urban Districts ..	19,531	24·5	26·2	25·7	23·6
Rural Districts ..	46,882	24·8	25·8	25·8	23·6
Norfolk—					
Norwich C.B.	26,286	24·9	25·9	25·6	23·6
Other Districts ..	78,800	24·9	25·8	25·4	23·9

For marriages it is possible to separate town from country in Norfolk, contrasting Norwich with the rest of the county. This is done in Table XIII with the interesting result of showing a striking difference of marriage seasons. Norwich has the summer maximum typical of towns; the rest of Norfolk—in spite of the inclusion of Yarmouth and other towns—retains in full vigour the normal agricultural season, with autumn maximum and spring just ahead of summer. The separate figures for years of early Easter show, as might be expected, that Easter as a wedding occasion is more important to town-dwellers than to countrymen.

TABLE XIII

QUARTERLY DISTRIBUTION OF MARRIAGES 1922–34 IN NORWICH AND OTHER DISTRICTS OF NORFOLK

	Total Marriages in period	Percentage of Total Marriages falling in Winter	Spring	Summer	Autumn
In nine normal years—					
Norwich C.B.	9,823	15·2	26·3	30·7	27·8
Other Districts ..	22,886	17·0	24·8	24·3	33·9
In four early Easter years—					
Norwich C.B.	4,286	17·9	22·3	30·8	29·0
Other Districts ..	10,344	18·3	22·8	24·8	34·1

In London, it is possible to obtain marriage and birth statistics separately for most of the metropolitan boroughs. Table XIV gives figures for six boroughs, selected as presenting marked varieties of social conditions.

The table is based on actual numbers of marriages in the period 1922–34 and births in the period 1922(4)–1935(3), and the years with early Easter are excluded in the statistics of marriages.

In general, a prominent summer maximum of marriages (as in Camberwell, Kensington and Chelsea) is associated with a relatively marked maximum of births in spring. Where, as in Shoreditch and Poplar, the summer peak of marriages is small or absent, winter births equal spring births or—in Poplar—exceed them. The winter maximum of births in Poplar appears to represent a genuine seasonal movement, not an accident of averaging; winter births in Poplar are above those of all other quarters in eleven years out of the thirteen in the table. A regular winter maximum of births has not been found since the war in any other district examined, but consideration of the London boroughs suggests a connection between poverty and relatively high births in winter—representing spring conceptions.

TABLE XIV

LONDON: SEASONAL FLUCTUATION OF MARRIAGES 1922–34 AND BIRTHS 1922(4)–1935(3) IN SIX BOROUGHS

	Total in period covered	Percentage of Total falling in			
		Winter	Spring	Summer	Autumn
Marriages—					
Kensington	16,750	17·8	26·3	29·5	26·4
Chelsea	5,653	17·5	26·0	29·1	27·4
Camberwell	20,371	14·1	26·4	34·1	25·4
Bethnal Green ..	8,221	14·9	26·8	30·1	28·2
Shoreditch	8,537	15·1	27·1	28·4	29·4
Poplar	12,446	14·8	26·6	29·4	29·2
Births—					
Kensington	33,628	25·5	25·7	24·8	24·0
Chelsea	10,332	25·1	26·1	24·6	24·2
Camberwell	53,793	25·1	25·8	25·3	23·8
Bethnal Green.. ..	27,336	25·8	25·9	24·7	23·6
Shoreditch	26,904	25·4	25·4	24·2	25·0
Poplar	40,872	26·2	25·0	24·4	24·4

6

SEASONAL FLUCTUATION OF STILL-BIRTHS

Quarterly statistics of still-births have been published since the middle of 1927. Table XV gives the numbers of still-births in each quarter as a percentage of live births and shows that here, too, there is a seasonal fluctuation. Still-births are proportionately most numerous in winter and autumn and fewest in summer. This table must be read subject to the comment that the various quarters contain differing proportions of first births, so that, if there

TABLE XV

STILL-BIRTHS AS A PERCENTAGE OF LIVE BIRTHS 1927–1935

	1927	1928	1929	1930	1931	1932	1933	1934	1935	Mean
Winter ..	—	4·2	4·3	4·5	4·4	4·5	4·5	4·3	4·4	4·4
Spring ..	—	4·2	4·1	4·2	4·2	4·3	4·3	4·2	4·2	4·2
Summer ..	3·8	4·0	4·0	4·1	4·1	4·0	4·0	4·0	—	4·0
Autumn ..	4·2	4·3	4·3	4·2	4·3	4·4	4·5	4·3	—	4·3

is any tendency for still-births to occur more frequently at first births (or less frequently) the relation shown in the table would be affected. The correction either way for this seems likely to be small, and the table suggests that the change of birth seasons in the past eighty years has diminished slightly the probability of still-births. It has increased relatively the births in summer and spring when still-births are less likely, and decreased them in winter and autumn.

THE MEANING OF THE STATISTICS

In seeking to interpret the various statistics that have been passed in review, it is necessary to bear in mind the following (and perhaps other) changes of conditions in the period covered.

First, the change in the proportions of rural and urban populations in England and Wales as a whole, and in most of the separate districts examined. The districts least affected by this change since 1850–59 are probably Norfolk and Shropshire, remaining mainly rural, and London, which was mainly urban throughout.

Second, the decline in the birth rate since 1880, causing first births to be a larger proportion of all births in the post-war period than in either of the other periods.

Third, the practice of birth control which, being mainly if not wholly responsible for the fall in the birth rate, involves the possibility that seasonal variation of births is in part the result of design. Birth to-day is not quite as 'involuntary' an event as in the time when Farr wrote.

Fourth, the increase of holidays and in particular the additional bank holidays introduced in 1871. Sir John Lubbock has had much to do with altering the matrimonial customs of a nation.

The suggestion made at the outset, from the statistics for England and Wales as a whole, of a direct normal relation between marriage and birth seasons since the war, gathers strength from the information given later. The earlier diversity of birth seasons in different districts and their changes during the past eighty years shows that, in studying the seasonal fluctuation of births, we have to deal in the main with a social rather than with a physiological phenomenon.

The close agreement of phase between the seasonal courses of legitimate and illegitimate births confirms the connection between marriage and birth seasons. Marriage seasons have become more and more dependent on spring and summer holidays which, for an urban population, are also the natural opportunity for mating without marriage. The greater violence of the fluctuation in illegitimate births is only what should be expected; the legitimate births include a larger proportion of second and later births, which would not be affected directly by the marriage season. Finally, the statistics of the separate London boroughs point in the same direction.

For the nineteenth century the position is more complicated. It must be considered separately, for counties like Norfolk, Wilts and West Riding with the normal agricultural marriage season, and for urban counties like London and Middlesex.

In the normal agricultural counties, the peculiar relation of marriage and birth seasons might be explained statistically on a variety of hypotheses.

1. Since the proportion of births after the first is much greater in 1850–59 than to-day, the birth season in 1850–59 may be influenced substantially by births coming at more or less regular intervals after the first birth.

2. The high winter and spring birth rates may be regarded as coming not one quarter but five or six quarters after the marriage maximum, i.e. as representing a tendency for first births to occur fifteen to eighteen months after marriage.

3. The relation of marriage and birth seasons may rest on a widespread practice of ante-nuptial mating in rural districts during spring and summer, followed by marriage in autumn when a child was coming.

The first two hypotheses are improbable in themselves and supported by no evidence. The third hypothesis, on many grounds, seems the most likely, and obtains support from the seasonal movement of illegitimate births. The proportion of such births in country districts in the period 1850–59 is high, and the movement is strongly seasonal. The conditions of country life in spring and summer favour mating without marriage, both through opportunity and because in a small community there is less risk of marriage being refused by the man, if conception has followed, and the housing difficulty can be solved. By contrast, for the bulk of the population, the conditions of urban life are relatively less favourable than country conditions to mating before marriage and are relatively more favourable to marriage, because the housing difficulty is usually less acute.

The degree of assurance with which this hypothesis can be accepted depends in part on the extent to which autumn marriages in country districts mean Christmas marriages or October marriages respectively. On this, unfortunately, there is practically no statistical information. If the marriages were predominantly Christmas marriages, they might account in a normal way for a substantial number of births in the next winter but one; the second hypothesis named above would gain in probability. But it is not clear that in country districts the autumn marriages fall at Christmas rather than in October.[1] And, in any case, the still greater abundance of births in most districts in the spring quarter seems to put the second hypothesis out of court.

The feature discovered for Norfolk since the war, of marked diversity of marriage seasons as between town and country combined with practical identity of birth seasons, is interesting in several ways. For an urban population the most convenient occasions are the same for mating as for marriage, and through the growth of holidays, fall now, not at Christmas, but into the quarters that are also most convenient for mating but not for marriage in an agricultural district. The continuance to the present day in rural Norfolk of an autumn peak of marriages combined with a spring maximum of births, suggests a continuance of the ante-nuptial conception which is the most natural explanation of the 19th century relation between marriage and birth seasons. But it is important to notice that even in rural Norfolk summer births are far more common than they used to be. This appears to show that, in modern times, fertile mating at least is more commonly postponed till after marriage.

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[1] The Registrar-General in citing the figures for Gloucestershire in 1881 treats Gloucestershire as a fair sample of urban as well as rural England and expresses the view that the excess of marriages in October " would doubtless have been still more marked had a purely agricultural county been selected ". As my tables show, the seasonal movements for Gloucestershire alone do closely reflect those for England and Wales as a whole, at all the epochs examined chosen, and for marriages and births alike. The only differences are that for Gloucestershire, the winter births in 1850–59 are just above the spring births instead of equalling them and in 1922–35 the summer births are just above instead of just below the winter births.

If the third hypothesis be accepted (it is certainly the most probable one), it points to a custom of ante-nuptial conception in rural England on a very large scale during the nineteenth century, and continuing on a substantial scale to-day. On this hypothesis, the seasonal movement of first births has to show through the total of all births, most of which in probability would have no marked seasonal variation. The proportion of legitimate first children born of ante-nuptial conception might easily be as high as or higher than the proportions which have been determined by direct evidence for a similar racial stock in Australia and New Zealand.[1]

There remains the problem of the counties which were already urban or largely urban in the middle of the 19th century. In London, the change of marriage seasons since 1850–59 consists mainly of the substitution of summer for autumn as the definite maximum: a minor change is the relative decline of the first quarter. If it can be assumed that the first of these changes means in substance the substitution of August Bank Holiday for the Christmas holiday, this is a change of nearly five months in the maximum phase of marriage. The Christmas marriages of one year might be held to account for the relatively high births of the following autumn. But the illegitimate birth rate shows that there must have been relatively greater occasions for mating in the winter—a phenomenon for which there is no obvious explanation. And the winter peak of births in the 19th century is not easy to explain except on lines similar to those adopted for rural England—of considerable mating without marriage in spring, followed in a proportion of cases by marriage in summer or autumn.

CONCLUSION

The present article is limited to general comparison of marriage and birth seasons, by reference to their phases. It should be possible to look at the matter more closely and make a quantitative comparison, with a view to determining whether and on what assumptions seasonal fluctuation of births can be explained completely as a reflection of marriage seasons, or whether, on the contrary, it is to any extent an independent movement. But this investigation would involve making assumptions as to three points at least on which there is not as yet any definite information for this country—namely, (1) the monthly, in place of the quarterly distribution of marriages, (2) the proportion of first births to all births, (3) the quarterly or monthly distribution of births, with a distinction between births coming shortly after marriage and therefore affected by marriage seasons and births coming later. I hope to be able to return to this topic with the help of information not derived from official sources and not yet published. Here I must be content to offer a few provisional conclusions. The fourth and fifth of these conclusions are in the nature of hypotheses resting to some extent upon this supplementary material. The other conclusions arise directly from my survey of the registration statistics.

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[1] For Australia in the period 1891–1900 Sir Timothy Coghlan gave the proportions among 1,000 first-born children as 510 legitimate of post-nuptial conception, 233 legitimate of ante-nuptial conception, and 257 illegitimate. This calculation treats all illegitimate births as first births. Among legitimate births, 314 out of every 1,000, nearly one in three, were due to ante-nuptial conception. See *The Decline in the Birth Rate of New South Wales*, by T. A. Coghlan (Sydney, 1903).

1. There is a definite seasonal fluctuation of births which has now substantially the same phases in all the separate counties examined, whether urban or rural. In all these counties during the period 1922–35 births are at a maximum in the spring quarter, with the winter and summer quarters not far behind, and autumn showing a minimum well below the level of the other quarters.

2. In the middle of the nineteenth century the seasonal birth fluctuation differed as a rule materially from that now established and showed marked differences from one county to another. Both this change and the former diversity of phases show that the seasonal fluctuations of births must be attributed in the main not to physiological causes but to social habits.

3. Marriage seasons in most districts are now determined largely by the urban holidays—at Easter and Whitsun and in July and August. But in purely agricultural districts autumn retains much of its importance as a marriage season.

4. Alike for the present day and for eighty years ago, the seasonal fluctuation of births can be derived from the seasonal fluctuation of marriages on assumptions which, though not certain, are highly probable.

5. These assumptions include for the post-war period a degree of ante-nuptial conception much less than that

experienced in Australia and New Zealand, and a much greater extension of the custom—perhaps three or four times the present extent—in the middle of the nineteenth century.

6. While all the separate counties examined now show a broadly similar seasonal fluctuation of births, smaller districts—such as London boroughs—show individual peculiarities, presumably associated with industrial conditions.

7. While there is no direct evidence of a seasonal fluctuation of births independent of marriage seasons and of the resulting first births, the possibility of an independent fluctuation of natality—affecting subsequent as well as first births—is not excluded and might be revealed by further analysis. But further analysis could hardly be undertaken profitably except on the basis of monthly, in place of quarterly, statistics of births and marriages, and of being able to distinguish between first births and later births.

8. The general conclusion towards which the present analysis tends is that children are born on the whole far more in accordance with convention in urbanised post-war England, that is to say nine months or more after marriage, than they were in Victorian England, whether rural or urban. Nor is there any sign of considerable postponement of births after marriage. What the explanation of this may be, in terms of relations of the sexes, is a matter on which the analysis throws no light. In the examination of marriage and birth seasons, as in the social sciences generally, statistical survey should be only the first step, to be followed by direct investigation in the field.

The Theory of Saving[1]

By C. Bresciani-Turroni

II

DISEQUILIBRIUM BETWEEN SAVING AND INVESTMENT DURING THE TRADE CYCLE

1. Two Conflicting Theories.
2. Maladjustment Between Saving and Investment in the Absence of Monetary Disturbances.
3. Correcting Influences.
4. Influence of Inflation on the Relation Between Saving and Investment.
5. The Shortage of Capital at the End of the Boom.
6. The German Episode of 1924.

I

Two Conflicting Theories

The problem of the relation of saving to those recurring industrial fluctuations known as the "Trade Cycle" has attracted much attention since the time of the classical economists. In Mill's conception investment always follows upon saving, and when disturbances arise they are occasioned by a too rapid accumulation of savings, for which it becomes difficult to find a profitable investment. According to Mill[2] "the diminished scale of all safe gains inclines persons to give a ready ear to any projects which hold out, though at the risk of loss, the hope of a higher rate of profit"; speculations ensue, with the subsequent revulsions and the destruction of considerable amounts of capital. To sum up: at the root of commercial crises there is an unwise use of savings, which occurs because all known channels of investment are clogged.

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[1] Continued from Economica, February, 1936. Two lectures delivered in the London School of Economics and Political Science on May 29th and 30th, 1935.

[2] *Principles of Political Economy*, edited by Ashley, p. 734.

Modern economists have elaborated a more refined conception of the relation between saving and investment. According to a school, of which Professor Spiethoff and Professor Keynes are, respectively on the Continent and in England, the most prominent representatives, there is a maladjustment between saving and investment during the Trade Cycle. Saving and investment can go out of gear, even in the absence of monetary influences, such as inflation or hoarding, when the public change the rate of saving or the entrepreneurs change the rate of investment, there being, as Professor Keynes points out, "no automatic mechanism in the economic system to keep the two rates equal, provided that the effective quantity of money is unchanged." Exactly the same opinion had been expressed before by Professor Spiethoff in his classical inquiries on the business cycle. The production of new investment goods, and the formation of savings, are in his opinion two quite distinct operations; that is to say, capital goods are produced without the entrepreneurs paying attention to the willingness of the public to undertake durable investment. On the other hand, the accumulation of new savings takes place on the part of the public without any connection with the production of new investment goods.[1] Professor Spiethoff believes that it is mainly through changes in the rate of investment that an inequality between saving and investment is brought about. In the first phases of the expansion period the volume of investment increases under the impulse of high prospective profits; and there is at the beginning a large fund of savings, which may easily purchase the new investment goods; the prices of the latter rise and this causes the stream of resources devoted to their production to increase. In the course of time investment outgrows saving and this is the cause of the crisis. Thus the crisis arises out of an over-production of capital goods, to which there necessarily corresponds an under-production of consumption goods. Professor Spiethoff attempts to show—but this is in my opinion the weakest point of his theory—that, whilst at the end of the expansion period the prices of capital goods diminish and fall below cost of production, the prices of consumers' goods instead of rising, as one would expect, also fall. It should be added that Professor Spiethoff does not take into account monetary factors, to which he is inclined to attribute but secondary importance. As will be recalled in this connection, Professor Keynes professes in some passages of his great work on Money to feel much sympathy with Spiethoff's theory. In fact, however, though the starting point of both theories is the same, Keynes' and Spiethoff's views as to the effects of a disequilibrium between saving and investment are quite opposite. For Keynes the root of the trouble is, not a relative shortage of saving, as Spiethoff contends, but on the contrary an excess of savings over investment, and it is in the latter case that a fall in the general price level is alleged to occur.[1]

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[1] Spiethoff, article "Krisen" in *Handwörterbuch der Staatswissenschaften*, p. 76. See also "Der Kapitalmangel in seinem Verhältnisse zur Güterwelt" (*Schmollers Jahrbuch*, Vol. 33, 4, p. 50).

But other economists point out that a maladjustment between saving and investment cannot arise from non-monetary causes. Professor Robertson maintains, in his criticism of Keynes' theory, that when a fall in the price of total output occurs as a consequence of saving being in excess of investment, this fall is "seen to be attributable to hoarding by someone—either the public, or the entrepreneurs of consumable goods, or the dealers in securities, or those who handle the proceeds of new issues."[2]

On the other hand, Professor Hayek shows that in the absence of inflation investment cannot run ahead of saving. It is the function of the rate of interest to maintain equilibrium between the production of capital goods and that of consumption goods. Any extension of the production of capital goods beyond the limits set by the available supply of savings is prevented by a rise in the rate of interest, which immediately reduces the demand for capital and brings it in accordance with supply.[3]

Professor Cassel seems to take an intermediate view between the two conflicting theories. There is no doubt, according to him, that in social economy some "great" regulative factors are at work, which have their root in economic scarcity, such as the rate of interest and the prices of materials and of labour.[1] But the action of these factors takes time to make itself felt. After recovery has set in, the rate of interest remains for a time too low to check investment as effectively as it would be necessary in order to prevent future disturbances.

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[1] "I hold that the primary cause of trade depression is an excess of saving over investment, aggravated at a later stage by an increased propensity to hoard" (Keynes, A Rejoinder, *Economic Journal*, 1931). See also *Treatise on Money*, II, p. 381, where the author contends that the present slump was initially engendered by a deficiency of current investment relatively to saving.

[2] "Saving and Hoarding" (*Economic Journal*, 1933, p. 406).

[3] This section was already written, when my attention was called to a more recent paper by Professor Hayek ("Preiserwartungen, monetäre Störungen und Fehlinvestitionen," *Nationaløkonomisk Tidsskrift*, LXXIII, p. 176), where the author considers the influence of the time-factor on the relation between saving and investment. A maladjustment between saving and investment may arise out of wrong expectations of the entrepreneurs, who hope that the favourable conditions of the capital market, obtaining at the moment when they start investment, will continue in the future. Therefore, unforeseen changes in the rate of saving may occasion severe disturbances (p. 182).

2

Maladjustment Between Saving and Investment in the Absence of Monetary Disturbances

I personally suspect that the problem of disequilibrium between saving and investment has not always been stated correctly. As was shown in the preceding lecture, new investment (in the sense of the starting of new production processes) need not take place simultaneously with saving, or follow more or less closely upon it, but will in many cases precede saving. Investment is then financed not with savings but with bank credit, which anticipates future saving. The entrepreneurs who start new processes of production during the period OA (see graph at the end of the present section[2]), thus deciding that during the period BC new investment goods will be supplied instead of consumers' goods, are a set of people different from those who, during the period BC, will spend part of their income upon investment goods. In an ideal situation those who have the intention of saving money at a certain future period would order in advance from the entrepreneurs the investment goods which they will afterwards buy. This in fact often happens; for instance, industries which produce costly or quite special machines construct these machines on orders given to them beforehand by the purchasers. But even in this case it is not always quite certain that the completed product will be effectively bought. Besides, many important industries produce in advance large quantities of raw materials and half finished products simply in expectation of a future demand, which even the most able wholesale traders cannot forecast exactly.

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[1] *Theory of Social Economy*, II, p. 642.

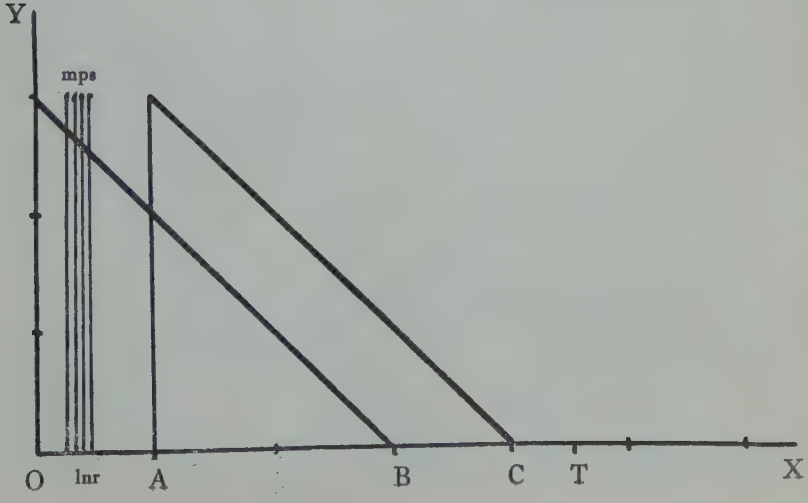
[2] This graph is reproduced from the first article (p. 11), where its meaning is explained.

Is it then to be expected that production will adjust itself to the forthcoming savings, in such a way that the aggregate cost of new investment goods will be equal to the amount of savings, as Walras' fundamental equation requires in order that a progressive society be in equilibrium ?

To point to the influence of the rate of interest seems to me not to be a full answer to this question. The argument runs as follows. There is a given amount of savings *awaiting investment* and a given demand curve for savings. Then demand and supply will be equated at a certain rate of interest, to which there will exactly correspond that length of the production process, that is rendered possible by the available amount of savings. In other words : when the supply of savings is comparatively scarce, the rate of interest will be high, and only short processes of production will be started ; when, on the contrary, savings are abundant, entrepreneurs will embark on longer processes. It will be seen that the argument implies that investment *follows* upon saving. It is so far perfectly sound. But in fact—this is one of the points stressed in the previous lecture—a vast amount of investment is done in view of *future* saving, with short-term funds put by the banks at the disposal of the entrepreneurs. There is no doubt that, during the period OA, in the absence of monetary disturbances, total investment will be kept through the rate of interest within the limits set by the supply of replacement funds and depreciation allowances, which are forthcoming during the same period. But is it to be expected that *present* new investment will be kept within the limits put by *future* saving ? If we put the problem in this form we must immediately admit the possibility of considerable maladjustment between investment and saving. Though the rise in the rate of interest, *during the period OA*, when the demand for loans increases, is without doubt a check to investment as a whole, it cannot prevent this latter from taking such a wrong direction, that will lead *during the period BC* to an excess of the cost of new investment goods over the amount of savings *then* forthcoming.

Let us suppose that in a given country some entrepreneurs begin to reckon at a certain moment with a future expansion in railway construction, which begins to be considered as a highly profitable business. Through bidding a higher rate of interest the entrepreneurs succeed during the period

OA in turning to the production of coal, raw steel, rails, locomotives, and the like, part of the available flow of short-term funds. How much the rate of interest will rise, in the absence of credit inflation, will depend on many circumstances, upon which I do not enter. They have been discussed by Dr. Meade in a recent book. The rise in the rate of interest will influence, for instance, wheat production, which had been organised on a basis of a lower rate of interest. Agricultural machines will not be replaced, fertiliser will not be bought, repairs of canals, roads and other durable works will be neglected, briefly: agriculture will become less capitalistic, and agricultural output will therefore decline in the future. Throughout the period during which the new capital goods are produced there will be still equilibrium between the demand and the supply of capital at a higher rate of interest than before. But will the savings forthcoming in the future, which are expected to be invested in railway construction, be sufficient to take over the new capital goods and release the bank credits? Clearly it is not possible to answer this question *a priori* in the affirmative. It is evident that there are many circumstances, impossible to forecast when the production of new investment goods begins, which might influence in the future the rate of saving. Shifts in the habits of the population, political events, financial reforms, psychological crises, fluctuations in the size of the national income and in its distribution among the various social



classes, changes in the composition of the population as to age and profession are but a few examples. Some recent statistics seem to suggest that the oscillations of aggregate income and of saving might be very considerable.[1]

3

Correcting Influences

However, some economists go, in my opinion, too far when affirming that, apart from monetary influences, divergencies between saving and investment will result in those great waves of expansion and depression which constitute the " business cycle." They do not take sufficiently into account the fact that, though there are no economic forces sufficient to prevent an inequality between *present* investment and *future* saving, influences are continually at work—that is to say, the great regulative factors alluded to by Cassel and Hayek—which, in the absence of counteracting monetary causes, continually tend to correct the divergencies between investment and saving and to restore equilibrium. It is, therefore, impossible for investment (as Spiethoff assumes) to go for a long time, year after year, its own way, irrespective of saving, until disequilibrium between investment and saving suddenly manifests itself and leads to a crisis.

Indeed, when there is a tendency for investment, under the influence of bright business prospects, to outgrow savings, this will after some time be reflected in a rise in the prices of consumers' goods, and in a corresponding fall in the prices of new capital goods below cost of production. Investment will, therefore, be prevented from continuing to develop along the wrong lines. Capital and labour will again be attracted towards the production of consumers' goods and the impossibility of lengthening the period of production will soon become manifest. Of course, there will be some loss, but incomparably less than during the actual business cycle; because there is good reason to suppose that the readjustment will be the more difficult, the longer a disequilibrium lasts. There are, as it were, two lines of defence of the economic organism against a lengthening of the period of production not warranted by an increase in the supply of saving; that is to say, there are preventive and positive checks; the former lying in the rate of interest, which must be paid for the borrowing of capital when investment is started; the latter lying in the changes in prices and in the rate of interest, brought about by divergencies between investment and saving.

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[1] See a penetrating analysis of the causes of maladjustment between saving and investment in Professor Fanno's paper " Cicli di produzione, cicli del credito e fluttuazioni industriali " (*Giornale degli Economisti*, 1931).

On the other hand, a sudden and unforeseen increase in savings will be accompanied by some disturbances even if investment does not fall short of saving. The additional savings will then be used in ultimate analysis in advances to production and, in the absence of unemployment, will provoke a rise in real wages, as explained in the preceding lecture. If the wave of new savings subsides after a while, real wages must again diminish. In this connection, it might be of some interest to observe that—while it would be possible, at least theoretically, to adjust beforehand production to any foreseen amount of savings when savings are used for purchasing ready capital goods—it would not be possible to avoid the disturbance brought about by changes in the amount of savings which is spent directly in buying the services of labour. Indeed, if the production of consumers' goods were restricted beforehand, to prevent any unnecessary fluctuations in real wages when it is forecast that savings will increase in the future, nothing else could be produced instead; because, at the time when the additional savings will be forthcoming, they will be used by assumption for remunerating labour and not for purchasing investment goods. When, for instance, it is forecast that some landlords will invest their savings in agricultural machines, it is possible to produce the latter in advance; but if the landlords spend a greater amount of savings than before for hiring workers to execute improvements, production cannot reckon beforehand with this use of savings.

Disturbances may also arise, even on the assumption that total savings are equal to the total cost of new investment, if there occur unforeseen changes in the use of money savings. It may happen that the public, instead of buying securities which represent new investment goods, prefer to invest their money directly, for instance, in house-building. A sudden wave of activity in the house building industry has recently taken place, for instance, in Germany—following the *mot d'ordre* that a good patriot should build a house, or at least repair an old one—and diverted a large part of the savings of the public from other investment. Such sudden changes in the use of savings may also occur as a consequence of foreign loans. If part of the savings, which are being formed during the period BC, is attracted to other countries, where higher rates of interest prevail, then they will not be available for buying the new investment goods which have been already produced in the lending country. Now, it is possible that these goods will be bought instead by the borrowing country; but if this latter is itself an industrial country, it will probably transform the foreign borrowing, not into capital goods, but into goods for consumption (as was the case with the German loans from 1924 to 1929). Sometimes the funds borrowed abroad will be taken from the lending country's fresh savings, sometimes they will be supplied out of the resources of the money-market; in the latter case they will be lent for a short time. A dangerous situation will arise if the borrowing country, hoping to be able later to replace short term funds with long term loans, gives too large an expansion to the production of fixed capital.

4

Influence of Inflation on the Relation Between Saving and Investment

It would be easy to accumulate examples of disturbances brought about during the saving process. The lengthening of the period of production by means of voluntary saving is by no means a smooth process. There is without doubt a persistent tendency to error of anticipation; but what I should like to stress is that it is unlikely that, in the absence of monetary disturbances, such as hoarding or inflation, this tendency should work for long periods in the same direction. On the contrary, it is probable that the divergencies between saving and investment will be irregular, and will not make themselves felt with unusual severity. Sometimes investment will tend to outgrow saving; but on the other hand technical progress, creating a flow of additional income, will often result in saving running ahead of investment.

It has been well shown by Professor Hayek that it is only when monetary inflation renders the supply of free money capital independent of the accumulation of savings, that the correcting forces making for a continuous adjustment between voluntary saving and investment are prevented from entering into action, so that a disproportion in the distribution of resources between consumption industries and investment industries can continue for a long time. The effect of money inflation is—as Malthus wrote more than one hundred years ago—to take away property from those who have fixed incomes and give a greater command over the produce of the country to those who buy and sell.[1] Inflation results, according to a modern expression, in "forced saving;" that is to say, some sections of the population such as capitalists, salaried classes and wage-earners are compelled through the rise in the prices of consumers' goods to restrict their consumption, thus setting free resources which might be turned to the production of new investment goods. So far forced saving has essentially the same effects as voluntary saving. But, unlike the latter, it gives rise to a situation which is most unstable and full of contradictions.

When the expansion phase of the Trade Cycle begins the situation is the following. The production of consumption goods has been considerably reduced, and that of capital goods, of course, still more. The liquid stocks of consumption goods, the aftermath of depression, have been reabsorbed. On the other hand, there is a large number of unemployed workers. In these conditions we ought to have low wages and a high rate of interest. In terms of Böhm-Bawerk's theory, the period of production ought to be shortened: this expresses the fact that the most urgent task is then to increase quickly the production of consumers' goods, and not to divert the existing resources to processes, which will give a return only after a long time. In a period when a large number of people still lack food, clothing, shelter and other necessities of life, it would not be advisable to embark on works which it takes years to complete. Yet this is what in fact happens owing to certain monetary circumstances, which completely conceal the true situation. During the depression a large amount of savings, and more especially of replacement funds, had not been invested; and this results in a quite abnormal liquidity of the banking system, when trade begins to recover. There is the appearance of an abundance of capital. The banks charge low rates of interest for loans, and when they are in need of legal means of payment they can easily (under the system prevailing in some countries of Continental Europe) rediscount part of their portfolio at the Central Bank, whose gold reserves had increased during the depression period. It is this easiness in credit conditions that gives from the beginning a wrong direction to new investment.

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[1] *Principles of Political Economy*, London, 1820, p. 513.

In a period of increasing voluntary savings two consequences will ensue, namely, a fall in the rate of interest and a rise in real wages. Both facts will combine to produce the same result, that is to say, to induce entrepreneurs to lengthen the period of production. On the other hand, in the case of forced saving being brought about by the expansion of bank credit or by State inflation, experience shows that low rates of interest are accompanied by low real wages. Inflation tends, as long as it continues, to keep real wages at a comparatively low level; it is this reduction in wages which renders it possible that a given "subsistence fund" may support a greater number of workers than before, or allow of starting longer production processes than before. At the same time, however, the low level of wages will induce many entrepreneurs to substitute hand labour for machines, thus shortening the production period.

The history of German inflation shows many examples of these conflicting tendencies. There is no doubt that inflation stimulated the production of capital goods; but at the same time much complaint was heard in those years about the fact that owing to the cheapness of labour German entrepreneurs did not care to buy new improved machines.[1] When inflation came to an end, and Germany lost the advantage arising out of a depreciating currency, it became apparent that the backward technical condition of her industry rendered it difficult for her to compete successfully with other industrial countries. It was only after the end of the inflation period that the "rationalisation" of the German economy began.

I think it essential in a theory of the Trade Cycle to make a distinction between the case where all workers are fully employed at the moment when the upward swing of the Trade Cycle begins, and the case where there are unemployed workers. In the first case, if productive resources are turned to the production of new investment goods owing to additional credit being granted by banks, the output of consumption goods must diminish after some time by an equal amount. This results in a sharp rise in the prices of consumption goods and in a corresponding fall in real wages. Now, if the workers are in a strong position thanks to the lack of unemployment, they are not likely to accept such a worsening of their position. They will enforce higher money wages, thus putting an increasing strain on the banking system. It is probable that in these circumstances the expansion phase would soon come to an end. This means in ultimate analysis that the working classes are not willing to endure the "forced saving," out of which the production of new investment goods ought to be financed.

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[1] See *Die Lage der Arbeiterschaft in Deutschland* (published 1923 by the Internationaler Gewerkschaftsbund, Amsterdam,) p. 59.

In reality, however, the expansion phase of an ordinary Trade Cycle generally lasts for several years. Why? The explanation is afforded in my opinion by the fact that at the beginning there is always a great number of unemployed workers. They return little by little to work, thanks to the additional credits. Recent experience shows that, as long as unemployment is still widespread, the increase in the demand for labour does not result in a rise in money wage rates. That is to say, the workers accept the reduction in real wage rates which is the consequence of the rise in the prices of consumption goods. It should be also observed that in this case a fall in real wage rates need not be accompanied by a fall in the income of individual workers, because it is possible that the loss occasioned by a diminution in wage rates is offset by increased occupation. The forced saving of the working classes takes in this case a peculiar form; that is to say, it does not entail a reduction in the consumption of the individual workers, but it compels the latter to give a greater sum of efforts than before against a total real income which has either remained the same or not increased in proportion.

There is another important circumstance. When additional credits are granted at a moment when there is a large number of unemployed workers, besides a surplus of unused plant, the current production of consumption goods need not be restricted, in order that longer processes of production may be started. Generally, forced saving, brought about by credit expansion, results then from the beginning in two sets of effects, namely, in a mere enlargement of the production process, which had shrunk during depression, and in a prolongation of this process. The increase in the output of consumption goods will then offset in part the influence of credit expansion on prices, thus preventing too sharp a fall in real wages, which would before long arouse the opposition of the working classes. In so far as an expansion of bank credit simply causes unemployed workers to return to the posts they formerly occupied in the production process, no distortion in the economic structure will take place, calling forth those reactions, which have been vividly described by Professor Hayek.

It should be added that the increase in the production of consumption goods during the expansion phase, far from containing the seed of an approaching slump as some economists have urged, is likely to protract the expansion period, because it mitigates the reactions which the wrong direction given to investment in other parts of the economic system tends to occasion. It is also possible that the increase in income becomes a source of additional savings, out of which part of the production of new investment goods will be financed.

To sum up: in my opinion a theory of the Trade Cycle, which professes to explain why the expansion phase may last for several years, ought to start from the fact that, when revival begins, there is generally a large surplus of labour; because, otherwise, expansion would very probably be soon stopped.

5

THE SHORTAGE OF CAPITAL AT THE END OF THE BOOM

Let us now touch a problem which still awaits a fully satisfactory solution. As expansion proceeds on its course a shortage of capital makes itself felt. Firms experience growing difficulty in raising funds. The most apparent and convincing symptom of this situation of the capital market is the sharp rise in the rate of interest. While some authors interpret the shortage of capital simply as a monetary fact, that is to say, as the consequence of the banks restricting their credits, other economists contend that there are deeper causes having their root in some changes in the structure of production. It will be recalled that the classical writers also had already pointed out that during the period of expansion there occurs "a conversion of circulating capital into fixed, whether by railways, or manufactories, or ships, or machinery, or canals, or mines, or works of drainage or irrigation."[1] The shortage of capital which manifests itself at the end of the boom means essentially, according to the classical writers, a scarcity in the funds for the maintenance of labour. As Mill writes, what is once expended in the construction of a railway "is incapable of ever being paid in wages or applied to the maintenance of labourers again; as a matter of account, the result is that so much food and clothing and tools have been consumed, and the country has got a railway instead"[2] The classical explanation of the scarcity of capital underlies also some modern theories of the Trade Cycle, such as those of Professor Spiethoff and Professor Strigl. Spiethoff, to whose theory I have already referred above, shows that at the end of the boom there is an excess of new investment goods relatively to the savings available to take them over. In this consists the shortage of money capital. The counterpart of it is, on the goods side, a scarcity of consumption goods for the subsistence of workers.

I agree with Spiethoff's theory, according to which at the end of the boom the distribution in output between consumption and capital goods is not in accordance with the distribution of money income between expenditure and saving. But I do not think that Professor Spiethoff has succeeded in making perfectly clear the reason why this disproportion should entail of necessity a shortage of money capital leading to unemployment. It might be argued that the disequilibrium between the supply of and the demand for consumption goods will result in a rise in the price of the latter and in exceptional profits for the industries producing them. It is true that many industries producing capital goods will suffer losses and will be obliged to dismiss their workers; but, on the other hand, the industries producing consumers' goods should have at their disposal, owing to their increased profits, the capital necessary for engaging new workers and extending production. It is, therefore, difficult to see why the reduction, absolute or comparative, in the output of consumption goods should necessarily result in a corresponding diminution in the flow of money capital, and, consequently, in a widespread unemployment.

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[1] Mill, *Principles of Political Economy*, p. 744.

[2] *Principles of Political Economy*, p. 743. Mill's conception is, however, not free from contradictions. In another passage he writes that the sums invested in the production of new capital goods are mostly taken from the annual overflowing of savings, which probably would have otherwise gone abroad or been thrown away unprofitably, leaving no tangible results, so that "the conversion of circulating capital into fixed is not likely to diminish in any rich country the amount of employment for labour" (p. 744).

To put the matter into a simple arithmetic example, suppose that in a given period the cost of new investment is 200 and that of consumption goods 800, whereas expenditure and savings of the public are 900 and 100 respectively. Savings fall short of investment by 100, and yet the aggregate money capital available for investment in the hands of the entrepreneur will be at the end of the period 1,000 as before.

This, however, presupposes that money wages will not vary. If, on the contrary, the working classes enforce higher money wages in the next production period, the money capital at the disposal of the entrepreneurs will not be sufficient for paying the higher wages to all workers.

Therefore, in order to explain the shortage in money capital, it is necessary to take into consideration, besides of course monetary causes, the movement of wages during the Trade Cycle. As pointed out above, a more or less substantial fall in real wage rates occurs at the beginning of revival. At these reduced rates the flow of "wage-goods" is sufficient to support an increased number of workers. Inflation creates then a permanent flow of profits, out of which the production or the purchase of new investment goods is financed. Profits take thus the place of spontaneous savings. No shortage of capital makes itself felt in the earlier phases of the expansion period.

Unemployment rapidly diminishes during these earlier phases and then ceases altogether. It is at this moment that the Workers' Associations begin to agitate for higher money wage rates, which should compensate for the rise in the cost of living. Part of the profits arising out of previous sales of goods will then be absorbed by additional wage payments, if the entrepreneurs wish to carry on production. For a time the entrepreneurs will succeed in getting more credit; but a moment will come when the banking system is unable to keep pace with the increasing requirements of business people.

Wood's statistics showing the course of real wages in England since 1850 show that crises have always been preceded by a very sharp rise in money and real wages.[1] Then a shortage of capital, followed by unemployment, will appear as soon as credit expansion is stopped. In spite of the profits of the industries producing consumption goods, not all workers can be employed at the rate of wages imposed by the Workers' Unions. Then the unemployment, which arises in the more remote stages of the productive process towards the end of the boom, will not be compensated by increasing employment in the industries producing consumption goods.

To this shortage of money capital there corresponds on the goods side the fact that the flow of goods for the subsistence of labourers has become insufficient to support all workers, owing to the rise in the rate of real wages.

It should be added that the rise in wages, besides absorbing part of the available funds of the firms, which in other circumstances could have been invested in the purchase of investment goods, obliges them very probably to suspend many productive operations which could be carried on only on the basis of low wages. Thus, as a consequence of a rise in wages, not only does the process of production tend to be shortened, as Professor Hayek has shown,[2] but production as a whole will be also contracted[3] and unemployment appears in some lines of industries which cannot be offset by expansion in other lines.

6

THE GERMAN EPISODE OF 1924

I fully realise that this conception, according to which at the end of the boom there is a comparative scarcity of consumers' goods (a theory whose most prominent representatives are in this country Professor Robbins and

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[1] See the chart given by Akermann on p. 274 of his *Realkapital and Kapitalzins*, Heft II, Stockholm, 1924.

[2] It has been recently objected (see Morgenstern, "Die Produktionsperiode," *Zeitschrift für Nationalökonomie*, 1935) that, owing to the indeterminateness of the concept of the "production period", there is little meaning in the statement that the production period has been lengthened or shortened.

Inflation results in a shift of productive resources towards the production of capital goods; and this is followed later by a readjustment. These changes in the structure of production (which I have illustrated in the case of German inflation in my paper "La crisi della stabilizzazione"—*Giornale degli Economisti*, 1926) seem to me to be a real fact, whether this fact is interpreted or not as a change in the length of the production period.

[3] "When farm labour can be had at low cost, some land can be cultivated profitably which could not be if the same kind of labour cost more. When farm labour is expensive and hard to find we actually find fairly good land going to waste. Only the best land can be profitably cultivated by expensive labour" (Carver, *Principles of Political Economy*, 1919, p. 412).

Professor Hayek) may sound a little strange and that it will be difficult to make the public accept it. It is also not easy to find in the facts observed during an ordinary Trade Cycle sufficient inductive verification for the theoretical results outlined above. There has been, however, one episode in the recent economic history which affords a striking confirmation of the view I have expounded. It was the German inflation, which showed in exaggerated proportions the features present during the expansion phase of an ordinary Trade Cycle. The dislocation in industry, which was brought about by inflation, and resulted in a contraction of the flow of consumption goods, was quite evident. Especially the situation at the moment when the boom collapsed was most interesting, because an acute shortage of capital was experienced, which seemed to many quite inexplicable, in view of the fact that the stock of capital goods had probably increased during the inflation period. All these facts indicate, in my opinion, that considerable importance should be attached to the German episode by anyone seeking an explanation of the Trade Cycle, though of course the peculiar conditions of Germany during the inflation period should also be taken into consideration.

One of the most conspicuous features of the German economy during the inflation period (and more especially after 1921) was the contrast between the intense activity in production and the very low standard of living of the population, excepting some small groups of inflation profiteers. The causes of this disharmony were then much discussed in Germany: I remember that a popular explanation, which met with much favour, was that Germany sent abroad a large part of her real income for reparation payments, a contention which much exaggerated the importance of these payments. According to another view, Germany wasted a large part of her resources, because she exchanged her goods against foreign goods at very unfavourable terms.

The true explanation was that inflation had diverted a large amount of resources from the production of consumers' goods to that of new investment goods. Agriculture was neglected, the output of textile goods and of shoes had been much reduced, the building industry had almost come to a standstill; yet large sums of money were invested in extensive industrial plants—which *The Times* called the "monuments of inflation"—coal mines were opened, new shipyards were constructed and the steel industry worked almost at full capacity. In the later stages of inflation it was the forced saving of large sections of the German population which afforded almost exclusively the means for financing production, voluntary saving having sunk almost into insignificance. At the same time the volume of employment continually increased under the strong impulse given by the rapid depreciation of the mark, which began in September, 1921, and resulted in a substantial diminution of real wages and a corresponding increase in industrial profits. During the summer of 1922 unemployment had practically disappeared in Germany; a most characteristic fact, sharply contrasting with the widespread unemployment which occurred a few years later, when the flow of wage-goods was much greater than during the inflation period. But since the summer of 1922 a strong reaction set in among the working classes against the diminution of wages. From that moment a shortage of capital began to make itself felt. At the same time unemployment made again its appearance. Then followed a period of great interest for the economist. On the one side the working classes struggled to restore the previous level of real wages. On the other side the industrialists met the demand for higher money wages by calling for more and more credit, which resulted in higher prices for consumption goods and defeated the attempt of the working classes. But the latter soon enforced a new increase of money wages, which was followed by further credit expansion. The outcome was a tremendous increase in the volume of Reichsbank credits. It was observed in Germany (and in Austria also, if I do not err) that inflation expanded at an increasing rate after the so-called "index system" was applied, that is to say, after the working classes obtained recognition of their claim for money wages to vary according to the rise in the index number of the cost of living.

The new issues of paper money only mitigated for a time the shortage of capital, which again became manifest as soon as wages had adjusted themselves to the new level of prices. A striking proof of this scarcity of capital was the abnormally low prices of shares of even the best German companies, which in some periods were worth only a small percentage of their original value. A statistician calculated that the aggregate value of the shares representing the capital of one of the largest German motor car factories was equal to the total selling price of about three hundred cars produced by that firm.

But it was at the end of 1923 and in the first half of 1924, when inflation had stopped and the inflow of foreign credits had not yet begun, that the shortage of capital manifested itself with unprecedented severity. The rate of interest jumped to astonishing figures, which will always remain as a curiosity in financial annals. For instance, in the first quarter of 1924 an average rate of interest of more than 50 per cent. per annum was paid in Berlin for short-term loans. This high rate of interest was reflected in the shift that occurred in the relation between the prices of consumption goods and those of capital goods. The former were very high—much above the level of gold prices in foreign countries—whilst the latter sank to low figures. The German economy reacted very distinctly to these price shifts : the production of consumption goods was stimulated, while that of capital goods was on the whole sharply reduced. Of course, this adjustment was accompanied by severe losses. A substantial part of the new instruments of production, which had been created during the inflation period, became valueless or had to be sold as scrap iron, thus clearly showing that the forced saving of the inflation period had been in vain. But perhaps the most interesting conclusion which the German episode suggests is that to the shortage of money capital there clearly corresponded, on the goods side, a scarcity in the flow of consumption goods. This scarcity in turn was the consequence of the distortion in the structure of production, brought about by war and inflation.

The best proof for the correctness of this conclusion is afforded by the way in which foreign credits operated. As is well known, Germany began to borrow on a large scale abroad in the second half of 1924. These credits acted as a sort of reagent on the German economy, showing what kinds of goods were lacking and what were available. It is reasonable to suppose that to the flow of foreign credits, which were of course contracted in money, there would correspond, on the goods side, the importation of exactly that kind of goods which the Germany economy then most urgently needed. Trade statistics show that foreign credits were accompanied by an inflow into Germany mainly of consumers' goods and of nearly finished intermediate commodities, or raw materials to be transformed in Germany into consumption goods. On the other hand, Germany tried to force the exports of iron articles, machines and other capital goods which were then superabundant.

The considerations, which I have developed in these two lectures, point to the conclusion—familiar to those who are acquainted with the recent English contributions to the subject—that, the deeper we attempt to look into the saving process, the more this latter reveals to us unexpected intricacies and manifold forms. This process is by no means so simple and smooth as the conceptions still prevailing not many years ago among economists would have us believe.

Instalment Finance. The Nature of Consumer Credit

By G. L. SCHWARTZ

NINE years ago an authoritative book was written on the problem of instalment selling, ostensibly in response to a charge that the bankruptcy of economic science was demonstrated by its failure to deal with this subject.[1] It cannot be said that this chivalrous incursion on behalf of the science was altogether successful or satisfactory nor that subsequent attempts by some other writers have done much to dissipate the prevailing confusion on the matter. On the contrary the subject has since become involved in the controversies provoked by the depression, and instalment selling has been elevated to an important place in the list of causes and remedies. Most advocates and opponents of schemes for maintaining or increasing purchasing power, for example, assume that instalment finance is an important device for achieving such aims and one moreover that is free from the disreputable associations of purely inflationary measures. If we can judge from business reports from the U.S.A. the volume of instalment selling is now regarded as a representative index of economic conditions and by many people as an independent factor in the process of recovery.

Perhaps the best method of illustrating the present state of theory on the problem is to take a possible example of the application of instalment finance and build upon it the type of analysis which has so far found favour with exponents. Let us suppose that a good television service has been established and that satisfactory receiving sets can be supplied at a price of £120. First of all it is pointed out that this price puts the sets beyond the immediate reach of all but the well-to-do, that the use will therefore be confined to this class and that further development and expansion of the industry will be held up while other classes are saving up the requisite purchase price, the chances moreover being that few of the latter section will exercise the trouble and patience necessary for such accumulation. The introduction of the instalment purchase system would alter the whole complexion of affairs and set going forces which would bring about profound modifications in the working of the economic system. It will be argued later that there is an important deficiency in this approach which leads to a completely erroneous concept of the nature of instalment finance and vitiates much of the subsequent analysis. To continue with the stereotyped approach, we learn that under the instalment plan, deferred payments, hire purchase, easy payments, pay-out-of-income, or any of the numerous titles which have been coined, an arrangement is set up by which people can acquire the sets immediately, on the stipulation that they pay, say, £4 a month for the next three years. The virtue of this arrangement is that, apart from it, the consumer cannot afford to pay cash, the dealer cannot afford to give the consumer credit, and the manufacturer cannot afford to give the dealer credit. With the aid of a specialist institution such as a finance company some such process as the following ensues. The consumer gives his note for the amount involved; the dealer sells the note to the finance company; the consumer pays instalments, sometimes to the dealer but more usually now direct to the finance company. The consumer obtains the set straightway, the dealer gets payment, and in turn can pay the manufacturer.

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[1] Preface to *The Economics of Instalment Selling*, by E. R. A. Seligman. New York. 1927.

Many writers on instalment finance are overwhelmed by the apparent novelty of all this, Professor Seligman, for example, being convinced that it has opened up an entirely new chapter in both theory and business life.[1] It has been hailed as the final stage in the development of the world credit system and a natural and logical addition to producers' credit which thus solves the existing contradictions of the capitalist economy. Other writers impressed by this view have endeavoured to incorporate the revolutionary element into the accepted body of economic doctrine, usually with rather disastrous results, and when the process of incorporation takes the form of applying the new principle in turn to such varied aspects as utility, the subsistence fund, the distribution of income, mass production under increasing returns with the concomitant power of dumping, foreign trade, the rate of interest, the structure of production, the trade cycle, over-saving and under-consumption, excess capacity and the function of middlemen, the effect, to say the least of it, is highly bewildering.

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[1] Seligman, *op. cit.* Preface, p. v.

If current views can be presented in any consistent form the order is somewhat as follows. First come the attempts to define the nature of instalment credit. These, accompanied by a brief historical sketch, usually constitute an apology for the institution and an endeavour to lessen the disrepute associated with consumption credits. This may involve an excursus into the nature of capital, with emphasis on the analogy between producers' capital and consumers' capital, and a complementary excursus into the nature of consumption with similar emphasis on the distinction between productive consumption and unproductive consumption. This preliminary analysis is usually inconclusive and does not carry us much further than the opening attempt at a simple definition.[1]

Next, given that the application of instalment finance results in a large increase in the effective demand for, and therefore the output of, television sets the question arises whether the satisfaction of this demand is achieved solely at the expense of other lines of demand and output. For the moment we confine the argument to the immediate effect. Seligman takes the view that the new financial facilities open up a choice to the consumer between durable and ephemeral goods, thereby implying that there is a transfer of demand from the latter to the former. He has practically nothing to say of the possible immediate effect on saving. Mr. Crick[2] distinguishes two possible immediate effects, one a curtailment of current consumption, the other a curtailment of money saving. On the first possibility his comments range over the ethical field where judgment is so insecure. He classifies consumption as harmful, neutral or beneficial and weighing up the prospects of an instalment-financed car ousting liquor on the one hand or the baby's Grade A milk on the other comes to the conclusion that on balance the tendency is towards a refinement of the aggregate current consumption. On the second possibility Crick makes an important deduction. The diversion of money savings to instalment payments changes the character of communal saving. " Instead of a new asset of a primarily or secondarily productive character the community has a variety of only remotely productive or actually non-productive assets, the property of its individual members. Instead of a factory or a modernised plant or a fleet of lorries the community has a number of motor cars and pianos ; instead of a screw in a ship a saxophone."[1] As will be seen later, this deduction together with the illustration is open to considerable criticism. Moreover, Mr. Crick goes on, the diversion of savings from productive assets into consumptive assets is accompanied by wastage owing to the fact that the individual assets are of smaller magnitude, and their acquisition, ownership and control is dispersed over a large number of people instead of being concentrated in a few hands as is the case with the more bulky type of productive asset. Thus the net addition to the real capital of the community is not so large and it can be concluded that an initial effect of instalment selling may be to check the accumulation of strictly productive assets. Dr. Zweig makes a similar point about wastage when he asserts that the new machinery necessitated by such activities of the instalment business as advertising, enquiries, debt collection, financing and insurance represent an increase of intermediary activities at the expense of productive facilities ; an increase in the class of dealers and middlemen to the detriment of the class of producers. It can therefore be said that the financing of consumption burdens production with new costs involved in intermediary activities.[2] Seligman also asks whether the costs of instalment selling may not be so high as to diminish the purchasing power of the community, without apparently realising that the finance company is also part of the community and its income part of the general purchasing power.

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[1] Seligman, *op. cit.* Vol. I, p. 141. "The idea which it is really sought to convey is that certain kinds of credit are granted to producers or advanced in order to aid the process of production and that other kinds of credit are granted to consumers or advanced in order to further the process of consumption. The appropriate terms would therefore be producers' credit as contrasted with consumers' credit, or in a more general way production credit as over against consumption credit. Production credit would therefore mean credit utilised for purposes of production, while consumption credit would denote credit utilised for purposes of consumption. Or if we prefer, producers' credit would mean credit granted to producers and consumers' credit would denote credit granted to consumers." The archidiaconal type of definition !

[2] *The Economics of Instalment Trading and Hire-Purchase*, W. F. Crick. London, 1929.

Mr. Crick's conclusion that the immediate effect may be a check to the accumulation of productive assets is qualified by the suggestion that saving can be overdone and that the check is not necessarily to be deplored. Without bringing in the trade cycle at this stage he introduces the concept of under-consumption and hints that a slowing up of capital accumulation may be very desirable at certain stages and that instalment selling may impose the required check. In the end to estimate the initial effect Mr. Crick has to balance the check to accumulation against the increased efficiency of labour due to the more refined consumption referred to above. It will be seen that the analysis is already getting into rough water, but when it goes on to trace subsequent repercussions, or reflex effects as Mr. Crick calls them, it is apt to get completely out of its depth.

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[1] *Op. cit.*, p. 60.

[2] F. Zweig, *The Economics of Consumers' Credit.* London, 1934, p. 75.

Mr. Crick, in examining the effects on production, does not stop at the crude argument, which satisfies so many writers, that the increased output of, say, television sets will most probably occur under mass production organisation and therefore with falling costs so that the general effect is a raising of the national income. He points out that the diversion of resources will probably bring about a rise of costs in other lines and again he has to strike a balance. But the refinement of consumption which consists in substituting television sets for largely non-essential and immediately consumed goods and services affects such industries as those supplying beer, tobacco, and cinema entertainments, those in which costs of production are relatively unresponsive to the demand for their output. Consequently the tendency to lower costs in one field is not fully offset elsewhere and the general effect is the exertion of a downward pressure on the general level of prices. But this is not the end of the process. With the world on a common monetary basis this price movement in one country cannot develop independently. Monetary forces will restrain this movement, and the downward pressure on prices exerted from the production side counterbalanced by a restraining influence from the monetary side may provide an almost ideal combination.[1] May we be excused for regarding this attempt to associate advanced monetary ideas with a prosaic problem as rather fantastic ? Mr. Crick, however, does continue to develop an orderly and consistent analysis and having brought us nearer to the ideal combination he deduces from this that a net increase in production will occur with more widespread and regular employment and higher individual wages. The larger communal income is thus spread more evenly and there is a true upward movement in the standard of living. If this analysis is rounded off by demonstrating that a substantial part of the additional income will be devoted to personal and corporate saving, so that the initial check to accumulation is made good by the reflex effects, the case for instalment selling is apparently justified. (The earlier qualification about a desirable check to oversaving can be forgotten.) In case, however, this is not conclusive Mr. Crick reinforces the argument with what again must be characterised as a departure into the pseudo-economic field where so many economists make a sorry performance. Not only should we take into account the negative aspect of the initial refinement in consumption, but also the positive gain from the new consumptive assets. Crick believes that there would be general agreement that most instalment assets make for greater personal comfort and contentment of the owners without counterbalancing discomfort and discontent among their fellow citizens. (Mr. Crick forgets his saxophone.) Even taking into account the burden of worry imposed by the instalment payments there is a large net increment of enjoyment. Enjoyment, however, need not necessarily mean benefit. Is the increased enjoyment to be classed as useful in the sense of making for increased efficiency ? Some enjoyment is, some is neutral, some certainly harmful, but on balance the probable effect is beneficial. 'Here then is another factor making for the restoration of the rate of productive saving.' This is magnificent, but it is not in the scope of economics.

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[1] Crick, *op. cit.*, p. 71 *et seq.*

Professor Seligman's work is not free from this unsatisfactory treatment. His section on the effects on savings is mainly characterised by it. The instalment purchase may stimulate the possessor to renewed and increased effort as in the case of the forward-looking individual who is courageous enough to marry even on a small income because he knows that his newly-found happiness will cause him to work harder in the future.[1] (Professor Seligman is apparently unacquainted with the theory that the best and hardest work of the world is done by unhappy husbands.) Further there is likely to be an increase in the capacity as well as the desire to save 'because the augmented satisfactions yielded by the instalment goods will be brought into such relations with productive capacity as to increase efficiency and the psychic income thus be transmuted into money income.[1]'

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[1] Marriage might be regarded as a flagrant example of the mortgaging of future income (see later) in order to purchase marital bliss on the instalment plan.

On the question of the lasting character of the stimulus afforded by instalment selling there is again much confused and inconclusive argument. The crudest version is that there is a shift of consumption in time and that all instalment buying is at the expense of future income and therefore of future demand. (According to one estimate, in the U.S.A. $5,000 Mn. of 1926 purchasing power was mortgaged in 1925.) The process inevitably entails a subsequent let-down of production unless the injections of instalment credit are continued or even according to some critics progressively increased. Dr. Zweig's view is on these lines.[2] Mr. Crick having shown that the introduction of a new volume of instalment selling gives a sudden upward push to production and therefore to the standard of living thinks the new position will be maintained if fresh instalment contracts replace expiring ones and *a fortiori* that the spurt will go on if the volume of instalment buying continues to increase. Once the spurt has worked itself out the underlying long-term forces will solely determine the future trend, but although this means a relative slowing up the subsequent movement is at a higher level. Professor Seligman refutes the charge that instalment selling merely advances effective demand in time by suggesting that the increase in production creates its own purchasing power, i.e. that the process is self-liquidating, and also by falling back on the earlier demonstration of the favourable effects on the productivity of the individual.[3] This section is economics at its weakest.

The above considerations naturally link up with views on the saturation point of the process and also its relation to fluctuations. Seligman thinks that the saturation point may continually recede, Mr. Crick that it is set by the range of the commodities possessing the qualities requisite for the grant of instalment credit facilities and believes that this limit has been reached in the U.S.A. though not here. In respect of fluctuations and the trade cycle in particular, there are some who regard instalment selling as a primary cause and many who consider it an aggravating factor.[1] Zweig accepts the view that it is an aggravating factor, and thinks that consumer finance under the ægis of the State or the Central Bank could be used to counterbalance the trade cycle. Crick and Seligman, accepting the cycle, make the analysis ultimately turn on the question which sections of the population indulge in instalment buying. According to Crick an expansion of instalment buying both during the boom and the depression would reduce the amplitude of the fluctuations. In this country it is the fixed income class which is responsible for the bulk of the instalment buying and their action is not sensitive to cyclical changes. In the U.S.A. the wage-earners undertake a large part of the instalment buying and their fortunes vary with the cycle. Hence in the boom their increased instalment buying checks the tendency to overproduction and thus lessens the severity of the subsequent depression from this cause. Their contraction of buying in the depression is an intensifying factor and ‘ on balance ’ their two influences neutralise. But the additional effect of surrenders and defaults is, through the swelling of surplus stocks, a net influence for the worse. Curiously enough Seligman, writing in 1927, argued that the wage bill was a relatively stable element in the national income.

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[1] Seligman, *op. cit.*, p. 277.

[2] Zweig, *op. cit.*, p. 59.

[3] Seligman, *op. cit.*, pp. 279–283.

The above line of analysis could be continued to show its application to the specific effects on money and credit, the rate of interest, the structure of production and other aspects, but enough has been said to demonstrate the tortuous character of existing theory on the subject.[2]

It is the contention of this article that the greater part of this analysis is irrelevant and much of it erroneous owing to the fact that the problem is approached wrongly at the outset.[3] The fundamental error is the assumption that a certain want is satisfied through the agency of instalment finance which could not be met on the same scale by any other known financial arrangement. A clue is found in Seligman's approach which lays down that there are three ways in which an individual can secure a commodity.

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[1] Tregoe, *Study of Instalment Plan Buying*, Bureau of Business Research, University of Oregon. “ One of the obstacles in the way of a return of widespread prosperity in the country is the fact that too great a portion of the national income is mortgaged to pay for goods purchased on the instalment plan in the past.”

[2] For an example of recondite analysis see Zweig, *op. cit.*, on the subsistence fund, p. 91, and on the distribution of income, p. 80.

[3] The analysis is really a discussion of the effects on the rest of the system of the introduction of a new commodity or of an appreciable increase in the demand and supply of an existing commodity. Even with this simplified approach there would doubtless be considerable diversity of opinion, if we can judge from recent controversies on public works. But although discussion of a proposal to run a television service as a form of public works on the lines of the telephone service would certainly be made to embrace a consideration of the effects on the morale of the persons absorbed into employment, surely no one would think it pertinent to discuss, let alone base the whole case on, the effects on the physical, mental, and spiritual welfare of the users of the service, with a negative allowance for the possible disutility to the next-door neighbour.

1. (1) Save first and buy the commodity for cash.
2. (2) Save while using the commodity and pay for it later in a lump sum.
3. (3) Save while using it and pay for it in fractional amounts.

This is true in so far as securing *ownership* of the commodity is concerned, but does not cover all the ways in which an individual can secure the *use* of a commodity. It leaves out of account the highly important and widespread arrangement by which entrepreneurs let out the services of a commodity. The full classification of the ways in which an individual can secure the services of a commodity would be

- (*a*) Hiring.
- (*b*) Ownership. 1, 2, 3 as above.

It is a pity in many ways that the old term hire purchase is being ousted by more flamboyant terminology: it did suggest the alternative of hiring without acquisition of ownership. Seligman in places hovers round this concept of hiring, especially in his section on the significance of fractional payments, but he obviously misses the full significance of it, otherwise he could not make such categorical statements as that instalment buying opens up to the individual the choice between durable and ephemeral goods or that through instalment credit the individual secures a present enjoyment of goods which could otherwise not be obtained until the future if at all. He would not have made this mistake if instead of regarding the instalment purchase of houses as not germane to his study he had actually started with this example. It is astounding how writers regard this form of house purchase as merely analogous to instalment buying instead of being the most conspicuous and important example of it.[1] If one asks whether in the absence of instalment purchase facilities the poorer sections of the population could enjoy the satisfactions provided by houses the answer jumps into one's face. Of course entrepreneur-owners would be responsible and have in the past been mainly responsible for a supply of houses which could be let to tenants. It is theoretically conceivable that in two communities of equal size and similar tastes and incomes there might be exactly the same number and type of houses, in one under the owner-occupier system financed by instalment arrangements and in the other under the entrepreneur-lessor system. The entrepreneur might even obtain his funds from a similar type of financial institution. Once this is grasped we get to the heart of the problem and a series of pertinent questions can be put to the exponents of the analysis outlined above. Would the finance tied up in the owner-occupier system be regarded as consumer finance and of an entirely different nature from the finance required for the entrepreneurial system? Would there be a difference in the character of the communal saving? Is a house a productive asset in one case and a consumptive asset in the other? In the owner-occupier system was there a diversion from productive credit and therefore a slowing up of capital accumulation? Was there an advancement of demand and therefore of production in time? Was there an increase in the purchasing power of the community? Are the future incomes of the owner-occupiers mortgaged in a way which in effect makes their position different from that of the tenants? Was there a different effect in the two communities on demand, money and credit, the rate of interest or anything? Was there in the one case a great net addition to the volume of credit which did not obtain in the other case? Does the entrepreneur-lessor reckon strictly in terms of yield and the owner-occupier on quite irrational considerations? Could it have ever been argued that the instalment device alone made the existence and the expansion of the building industry possible? Where are the extra costs emphasised by Dr. Zweig? In the owner-occupier system there is the cost of collecting instalments, but in the other system the cost of collecting rents. Could anything useful or definite be said about the psychic effects of the one system or the other? Is any new or special economic theory required to explain the working of the owner-occupier arrangement?

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[1] Seligman, *op. cit.*, p. 11.

What is true of houses is true of motor-cars, television sets or any other commodity adapted to instalment selling. But when the more modern type of durable good is under consideration writers assume that if in a country with a million cars 800,000 are being acquired by the aid of instalment finance these 800,000 would not have come into existence in the absence of such facilities. The possibility of an extensive car hire-service of the type already familiar is quite overlooked. Starting from this fallacy we get the whole chain of faulty deductions and irrelevant argument.

Thus Mr. Crick, as shown above,[1] assumes that the extra motor cars are obtained in the place of a factory, a modernised plant or a fleet of lorries. If he had said fleet of taxis he would surely have become suspicious of his argument. He could not have made the point that productive assets were different in kind and few and bulky in comparison with the consumptive assets born from instalment finance.

We have evidence on all sides that the entrepreneur-lessor and the owner-user systems are interchangeable. Already in this country in the case of houses the slogan of the last decade "It is cheaper to buy" is being challenged by the advertisement "It is cheaper to rent." An economic essay which attempted to reconcile these two claims would be a valuable contribution to the theory of instalment selling. The hire service of motor cars is already a well developed trade, and since the public has the choice between using a hired or an owned car the real problem is to explain what determines the choice. Another way of posing the problem is to demonstrate that the public is really buying its buses on the instalment plan since the entrepreneurs calculate to cover depreciation. Radio sets can also be obtained on hire with the assurance that this is the cheaper way of securing the service, and there are innumerable commodities which can be furnished as amply under one system as under the other.[2]

This is not to say that there may not be considerable differences in the developments under the two arrangements. In fact it is suggested that the relevant and profitable line of analysis of instalment selling is an enquiry into the difference made to the demand and supply of a commodity when instalment selling facilities are available as compared with the situation under alternative forms of finance.

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[1] p. 185.

[2] Real consumer credit would be loans to pay instalments and running costs: but this would also apply to loans to pay rent and tenant's repairs.

As an example, the entrepreneur-lessor system (*a*) could be compared in this respect with the owner-user system (*b*) on the following lines :—

(1) No difference in demand and supply under (*a*) or (*b*).
The theoretical example of exactly the same number of houses under the two systems has been mentioned above.

(2) Different form of supply but in the same line and of equivalent capacity.
  (*i*) If the ownership of motor cars by less well-to-do persons were not facilitated by instalment purchase facilities entrepreneurs would meet the demand for road travel by furnishing charabancs and taxis. It is more than probable that the legislative restrictions on coach services in this country have induced many people to become owner-drivers on the instalment plan.
  (*ii*) The alternative to the small electric washing machine owned and used in the home is the entrepreneurial large scale laundry.
  (*iii*) In the case of houses the entrepreneurial type is likely to be more standardised. The idiosyncrasies of individuals would not be catered for as generously as under the owner-occupier system. The effects of the diversity of owner-occupiers' tastes can be seen in post war housing.

(3) No supply forthcoming under (*a*).
The writer can only think of such obvious and repellent examples as the tooth-brush. In cases where the hirers cannot be trusted not to maltreat the property entrepreneurs may be unwilling to function. It is possible that the shortage of low rented houses may be due to the fact that the habitual maltreatment of such property renders it unprofitable.

(4) Some supply under (*a*) but larger demand and supply under (*b*).
  (*i*) Entrepreneurial organisation may effect economies of pooling. A car hire service system could operate the same mileage of road travel with fewer cars.

(*ii*) Ownership may be desired for its own sake. Probably for this reason alone there are more cars than would have been demanded under (*a*). The same may be true of houses.

(*iii*) The owner-user may underestimate the risks of ownership.[1] He may not foresee or allow for obsolescence and changing values to the extent that entrepreneur-lessors do. This was possibly the situation in housing just after the war and may to a certain extent apply even now. In 1920 a shrewd landlord would have allowed for a substantial fall in the value of a new house built at the prevailing high costs and would have required a rent sufficient to cover this subsequent write down. A prospective tenant who ignored this factor would have come to the conclusion that instalment purchase was a cheaper method of acquiring accommodation.

(*iv*) Because owner-users treat the commodity better the cost of using it may be actually lower and ownership demand is therefore encouraged. The charge for hiring a car must or should cover the maltreatment inflicted by hirers. In the same way the cost of using a commodity may be less to the owner-user because he performs many services on it himself which must be paid for under a hiring system. The cleaning and care of a car is an obvious example. The entrepreneur-lessor must endeavour to cover this cost which is actually disbursed by him; the owner-driver may not calculate the value of his own labour.

(*v*) Legal restrictions may discourage the entrepreneur-lessor. As an example, the possibility that rents may be restricted will discourage acquisition of house property for letting. One form of protection against inflation is to become the owner-occupier of real property. The entrepreneur-lessor would find this protection nullified by rent restriction.

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[1] The fact that under the owner-user arrangement the equity in the property is with the user is an interesting and important aspect which tends to be overlooked because of the preoccupation with irrelevant analysis.

It will be realised that the list could be extended, also that most of the considerations are of an extraneous character and that very slight changes in opinions and circumstances might reverse the situation in favour of one arrangement as against the other.

Suppose there were a shift in favour of the entrepreneurial system, people preferring to rent flats instead of owning houses, and to hire cars, radios, and other durable goods instead of owning them. There would probably be a considerable decline in the volume of instalment finance.[1] It may be asked whether the exponents of the analysis outlined above would be satisfied that the effects would be exactly the reverse of those which they allege follow upon the injection of instalment credit.

When we are clear about the fundamental character of the institution of instalment finance and realise that it is merely an additional facility in the marketing organisation, a useful and important addition but not a revolutionary innovation, we can go on to discuss some of the more abstruse problems associated with the subject. It will probably be found that most of them can be subsumed under the general theory of money and credit.

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[1] The entrepreneurs might borrow on the instalment plan from a finance company: but they might alternatively acquire the assets by an issue of redeemable debentures.

Time and Investment

By K. E. Boulding

"An Investment" is the complete history of the payments made into and out of a day book account. It consists algebraically of a series of payments, i.e. of transferred sums of money, some of which are positive and some of which are negative, each being associated with a certain "date"; the "date" being the interval of time between the payment and a given base date. The base date can be any convenient point of time, and will generally be taken to be the point of time at which the first term of the payments series occurs. We will adopt the convention that time measured "forwards"—i.e. from past to future—is positive, while time measured "backwards" is negative. We can then write as a perfectly general formula, that if X_t is the "present value" of X_o at a date t years from X_o, and i is the rate of interest,

$$X_t = X_o(1+i)^t. \qquad (1)$$

If X_t is "past" relative to X_o; then t is negative (say $-s$) and the equation becomes the ordinary "discounting" equation,

$$X_t = \frac{X_o}{(1+i)^s}.$$

We must also adopt a convention with regard to the algebraical sign of the payments; which convention we adopt is quite immaterial. The most obvious one is to look at the payments from the side of the investment itself and regard all payments made into the account (i.e. added to it) as positive, and all payments made out from the account (i.e. subtracted from it) as negative.

We can make no absolute definition of the limits of an individual account, nor can we construct any absolute criterion of relevance for a particular payment. We must simply accept the fact that payments are in practice classified into "accounts" by business men.

We shall consider first the simplest type of investment; that in which all the payments of the payments series are made between the investor and his investment, and no payments are made to outsiders. Examples of this class are loans at interest, the purchase, holding, and sale of bonds or securities of any kind; the simplest example is the loan repaid after a number of years with interest added. We have, say, a positive payment, m_o (the loan) and a negative payment, n_1 (the repayment with interest) after t_1 years. Then the "yield" or the rate of return on this investment is defined by the equation

$$m_o(1 + i)^{t_1} - n_1 = 0 \tag{2}$$

That is to say, the rate of return is the rate at which the positive payment must grow in order to be equal arithmetically to the negative payment after an interval of time equal to the interval between the two payments. If then there is to be a positive rate of return, two conditions must be fulfilled: first, the positive payment must be smaller than the negative payment—i.e. the payments out of the investment must exceed the payments in : "returns" must be greater than "outlay"—and secondly, the positive payment must be previous to the negative payment in time. In such a case it is obvious that the longer the interval between the two payments, the payments being constant, the smaller the rate of return; the more time the payment has to grow, the smaller its rate of growth has to be. This case is illustrated graphically in Fig. 1. If we plot time

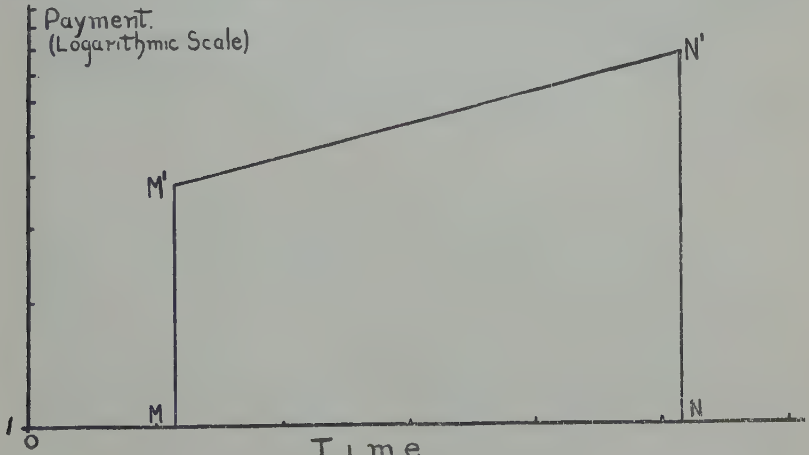

Fig. 1.

along the X axis, and plot the logarithm of the payments along the Y axis (i.e. if we plot our curves on semi-logarithmic paper), then growth, or compound interest curves, appear as straight lines—the slope of the line being the rate of growth—i.e. the rate of return.[1] Then if MM', $N'N$ represent the values of the positive and negative payments respectively, at dates OM, ON, the line $M'N'$ represents the growth curve and its slope is the rate of return in the investment. Clearly, if we keep MM', $N'N$ constant, increasing MN (the period of investment) lowers the slope of $M'N'$: increasing the ratio MM'/NN' raises the slope of $M'N'$. The algebraic sign of a payment in this figure is indicated by the direction in which the line representing it is measured : positive payments are measured as from M to M' : negative payments as from N' to N.

In this case there is no question about the concept of the period of investment : it is simply the time distance between the two payments. The question now arises, however, can we apply this analysis to the general case, where we have more than two payments ? In the general case we have positive payments, $m_1, m_2, \ldots m_h$, at dates $t_1, t_2, \ldots t_h$, and negative payments $n_1, n_2, \ldots n_k$, at dates $s_1, s_2, \ldots s_k$. The rate of return, i, is then defined by the equation :

$$m_1(1+i)^{-t_1} + m_2(1+i)^{-t_2} + \ldots + m_h(1+i)^{-t_h} = n_1(1+i)^{-s_1} + n_2(1+i)^{-s_2} + \ldots + n_k(1+i)^{-s_k} \quad (3)$$

In words, the rate of return is a rate of growth which will make the positive payments grow into a sum, by a given date, equal arithmetically to the sum into which the negative

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[1] In measuring the slope of growth curves on semi-logarithmic paper we must, of course, measure the vertical ordinates on a natural logarithmic scale. If we compound interest continuously (as we are doing in Fig. 1), equation (2) becomes

$$m_0 e^{it} = n_1$$

This equation may also be written :

$$i = \frac{1}{t}(Log_e n_1 - Log_e m_0)$$

The right hand side of this equation is the slope of the compound interest line on the logarithmic diagram when the vertical ordinates are measured on a natural logarithmic scale. In practice it is not easy to read off the slope of a growth line : perhaps the easiest method of finding what rate of return a given growth line represents is to find out from the figure how many years it takes a sum to double itself and then calculating, or finding from tables, the rate of return from that datum.

It must be noticed that on the logarithmic figures the points M and N do not represent zero payments but a payment of one unit : the lines MM′, N′N therefore really represent a sum which is one unit less than the actual payment represented by the ordinates of M′ and N′. This difficulty arises, of course, because the zero of the logarithmic scale is at minus infinity and cannot be represented on the diagram. The difficulty, however, is only one of exposition : in the text I have treated the points M and N as if they truly represented zero payments. The same device has also been used in Fig. 2.

payments will grow by the same date. If the rate of return is positive the positive payments must be on the whole earlier than the negative payments and their sum must be smaller. There is no necessity, it must be observed, for *all* the positive payments to precede all the negative payments. We can think of the time-positions of positive and negative payments as " chords " on a time-scale ; the chords may overlap, but the positive chord must be on the whole nearer the " past " end of the scale than the negative chord.

The question now arises, can we define an " average date " for the positive and negative payments respectively ? Let us take first the positive payments, $m_1, m_2 \ldots m_h$ at dates $t_1, t_2 \ldots t_h$. We shall define the " time centre " of these payments, for reasons which will appear shortly, not by any ordinary statistical average, but as follows. The *time centre* of a group of payments is that date at which the sum of the present values of the payments, discounting at the internal rate of return, is equal to the sum of the payments. Thus if T_m is the date of the time centre of the positive payments, T_m is given by the equation

$$m_1 (1+i)^{T_m - t_1} + m_2 (1+i)^{T_m - t_2} + \ldots + m_h (1+i)^{T_m - t_h} = m_1 + m_2 + \ldots + m_h \quad (4)$$

It can be easily seen that T_m lies somewhere intermediate between t_1 and t_h, the first and last dates of the series. At the date t_1 the sum of the present values of the payments is less than the sum of the payments, for the present value of each payment is less than the payment itself. At the date t_1 the sum of the present values of the payments is greater than the sum of the payments ; for the present value of each payment is greater than the payment itself. At some intermediate point the present value of some of the payments (the " past " payments) will be greater than the value of the payments themselves, while the present value of the other (" future ") payments will be less ; where these just balance is the " Time centre."

We can similarly define the centre T_n for the negative payments, $n_1, n_2 \ldots n_k$ at times $s_1, s_2 \ldots s_k$ by the equation

$$n_1 (1+i)^{T_n - s_1} + n_2 (1+i)^{T_n - s_2} + \ldots + n_k (1+i)^{T_n - s_k} = n_1 + n_2 + \ldots + n_k \quad (5)$$

Now multiplying equation (4) by $(1+i)^{T_n - T_m}$ we have

$$(1+i)^{T_n}\left[m_1(1+i)^{-t_1}+m_2(1+i)^{-t_2}+\ldots+m_h(1+i)^{-t_h}\right] = M(1+i)^{T_n - T_m} \qquad (6)$$

where $M = m_1 + m_2 + \ldots + m_h$.

Equation (5) may also be written:

$$(1+i)^{T_n}\left[n_1(1+i)^{-s_1}+n_2(1+i)^{-s_2}+\ldots+n_k(1+i)^{-s_k}\right] = N \qquad (7)$$

where $N = n_1 + n_2 + \ldots + n_k$.

Now from equation (3), if i is the internal rate of return the quantities in the square brackets in equations (6) and (7) are equal. We have therefore:

$$M(1+i)^{T_n - T_m} = N. \qquad (8)$$

The interval between the time centres of positive and negative payments, $T_n - T_m$ may properly be called the "Time spread" of the investment. It is the length of time for which a quantity equal to the sum of the positive payments would have to grow (at the rate of return) in order to equal the sum of the negative payments. This is the really *significant* period of investment.

It is interesting to trace the relation between this "Time spread" as defined above and the "average interval" between positive and negative payments. If the rate of return is small enough so that we can neglect its square and higher powers we can expand each term of equation (4) by the binomial theorem, taking the first two terms of the expansion only. We then have:

$$m_1(1+T_m i - t_1 i)+m_2(1+T_m i - t_2 i)+\ldots+m_h(1+T_m i - t_h i) = m_1+m_2+\ldots+m_h$$

which reduces to:

$$T_m = \frac{m_1 t_1 + m_2 t_2 + \ldots + m_h t_h}{m_1+m_2+\ldots+m_h} = \bar{t} \qquad (9)$$

Similarly we have:

$$T_n = \frac{n_1 s_1 + n_2 s_2 + \ldots + n_k s_k}{n_1+n_2+\ldots+n_k} = \bar{s} \qquad (10)$$

That is, if i is small the time centre of each group of payments is the weighted arithmetical average of the dates of the payments, each date being weighted by the payment corresponding to it.

These equations are very useful in the arithmetical determination of the rate of return in any given investment. (See Appendix.)

The time interval $\bar{s} - \bar{t}$ is the most general formula for what is usually known as the "average period of investment." If we have only one positive payment at a point of time t_m, then

$$\bar{s} - \bar{t} = \frac{n_1 (s_1 - t_m) + n_2 (s_2 - t_m) + \dots + n_k (s_k - t_m)}{n_1 + n_2 + \dots + n_k}$$

The "average period" of investment in this case is the weighted average of the dates of the negative payments taken from the date of the positive payment as base date. Similarly if there are a number of positive payments and one negative payment the "average period" is the weighted average of the dates of the positive payments, reckoned from the date of the negative payment as the base date. These two cases correspond to the "average disinvestment period" and the "average construction period" respectively. The numerical divergence of the average period of investment from the time spread is not usually very large: but for theoretical purposes it is the "time spread" which is really important.

We shall now prove an important proposition: that if we take a certain payments series, with a time spread T, and repeat this payments series, beginning at any date but keeping the original intervals between the payments, both the time spread and the rate of return in the payments series formed by the original series and its repetition is the same as the time spread and the rate of return in the original series. This is true however many times we repeat the original series, and at whatever dates.

For the sake of obtaining simplicity in exposition without losing generality, suppose we take as our original payments series a series of four terms, two positive and two negative. The payments series may then be represented by Table I.

TABLE I.

Date	0	t_1	t_2	t_3
Payment	m_o	m_1	$-n_2$	$-n_3$

The base date is taken at the first payment for simplicity of exposition. Now suppose we repeat this series, beginning at a time t_4, which, it must be noticed, need not be later than the latest payment of the original series: there is nothing, that is to say, to prevent the repetition from beginning while the original series is still in process. Then the payments series of the investment formed by the original and the repeated series is:

TABLE 2

Date	0	t_1	t_2	t_3	t_4	t_4+t_1	t_4+t_2	t_4+t_3
Payment	m_o	m_1	$-n_2$	$-n_3$	m_o	m_1	$-n_2$	$-n_3$

Now, the rate of return, i, in the original investment is given by

$$m_o + m_1(1+i)^{-t_1} - n_2(1+i)^{-t_2} - n_3(1+i)^{-t_3} = 0$$

The rate of return, i', in the "duplicated" investment is given by

$$m_o + m_1(1+i')^{-t_1} - n_2(1+i')^{-t_2} - n_3(1+i')^{-t_3} + m_o(1+i')^{-t_4} + m_1(1+i')^{-t_4-t_1} - n_2(1+i')^{-t_4-t_2} - n_3(1+i')^{-t_4-t_3} = 0$$

i.e. by

$$(1+(1+i')^{-t_4})\left[m_o + m_1(1+i')^{-t_1} - n_2(1+i')^{-t_2} - n_3(1+i')^{-t_3}\right] = 0$$

whence it is clear that $i' = i$: i.e. the rate of return in the duplicated investment is the same as that in the original. Then the time spread, T, in the original investment is given by the equation:

$$(m_o + m_1)(1+i)^{T} = n_2 + n_3 \tag{11}$$

Similarly the time spread in the duplicated investment, T', is given by the equation:

$$2(m_o + m_1)(1+i')^{T'} = 2(n_2 + n_3) \tag{12}$$

Comparing equations (11) and (12), as $i' = i$, we have

$$T = T'.$$

The argument clearly holds for any number of repetitions. This result can also be proved directly by calculating the time centres of the two investments. It may seem surprising at first sight, but the logic of it is fairly clear. When we repeat the "element," we do of course move the time centres of each of the payment groups forward; but each time centre is moved forward by exactly the same amount, and the interval between them is not changed. In any investment, therefore, which consists of repetitions, however ordered, of an elementary payments series, the time spread of the element is characteristic of the investment as a whole. This is true however many repetitions there are, and however far they extend through time.

Now, there are three ways in which we may repeat an element of investment: we may repeat it at random, we may begin each new element immediately on the completion of the old, or we may begin a new element each " year "—a " year ", of course, being any appropriate unit of time. The first mode of repetition need not detain us; it is rare in practice and has no theoretical significance. The other two modes of repetition, however, are very frequent in practice, and of very great theoretical significance; for by means of them we can turn an " element " of investment, which is strictly bounded by " dates " in time, into a " continuous " investment which is not so bounded. In other words, an " element " of investment: a single apple tree, or a single house, or a single machine, must come to an end sometime: but when repeated it forms an investment which may stretch into the indefinite future. When, then, we come to examine the relations between the time structure of an investment and its capital structure, we must be very careful to distinguish these three forms of repetition.

In the first place let us consider the case of an element of investment, i.e. a payments series which is not repeated at all, and which cannot be analysed into repetitions of any simpler series. Such an investment might be the voyages of adventure of the mediæval merchants, each of which represented a payments series not to be repeated, or to be repeated only at random. Now, the total amount invested in a given investment up to a certain date is the net algebraical sum of all payments made to that date, plus the accrued interest payments. Each time the owner pays a sum into the account of the investment, the capital increases by that amount; each time the owner draws a sum out of the investment the capital decreases by that amount. And in the intervals of time between payments the capital grows at the internal rate of return. Thus, suppose I buy a security for £100; receive £5 after a year, £5 after two years, and then sell the security for £100. The rate of return on this investment, calculated by equation (3), is .05 per annum. On the day I buy it, the capital invested is £100. Throughout the first year the amount invested grows, as interest accrues without being withdrawn.

At the end of the first year the capital is £105; I withdraw £5 and the capital sinks to £100 again. Similarly for the second, or any subsequent years, till I sell the security and the capital drops to zero. The simple general case of four payments is illustrated in Fig. 2. Along the X axis we plot time, on a linear scale; on the Y axis we plot the total capital invested, on a logarithmic scale, for the reasons mentioned earlier.

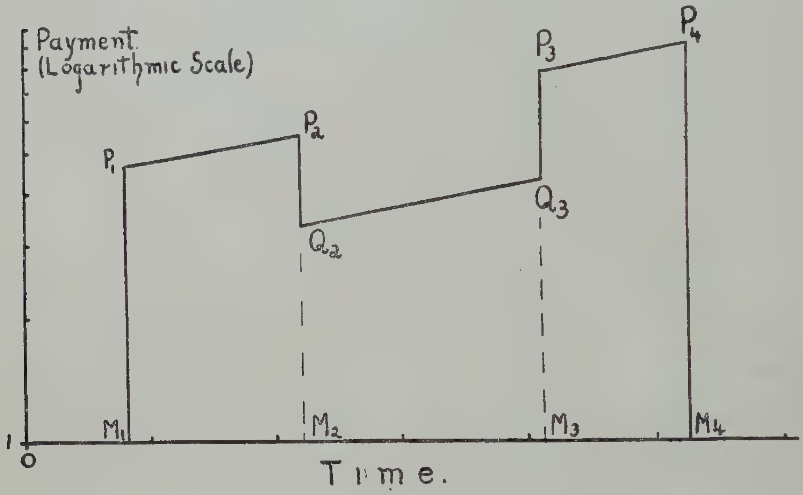

Fig. 2.

Thus, our net payments series is, we suppose, a positive payment M_1P_1 at a date OM_1, a negative payment P_2Q_2 at a date OM_2; a positive payment Q_3P_3 at a date OM_3, and a negative payment P_4M_4 at a date OM_4 which liquidates the investment. The line $M_1P_1P_2Q_2Q_3P_3P_4M_4$ exhibits the amount of capital invested at each date. The slope of the lines P_1P_2, Q_2Q_3, P_3P_4, which are parallel, show the internal rate of return. If the slope of these lines is not the internal rate of return—i.e. if we reckon accrued interest at any other rate than the internal rate—the investment will not be properly liquidated. Thus if we reckon interest accruals at above the internal rate, i.e. if the slope of the lines P_1P_2, etc., is too great, we shall arrive at a position at the time OM_4 in which the supposed amount of capital invested is greater than the last negative payment, and therefore cannot be liquidated by that payment. If we reckon interest accruals at a rate below the internal rate, the amount of capital believed to have been invested by the date OM_1 will be less than the final payment, which will "over-liquidate" the investment. This point cannot be too strongly emphasised: that the very concept of the amount of capital invested in an investment at a given date involves knowledge of the "true"—i.e. the internal—rate of return in the investment, and consequently presupposes knowledge of the future course of payments. Of course, in practice the future course of payments, and hence the internal rate of return, can only be guessed at; as time proceeds these guesses are rectified by reckoning capital losses or gains—i.e. by writing off or "writing on" capital. If there were perfect knowledge, of course, there could be no capital loss or gain. Now, the amount of capital necessary in an investment—i.e. the minimum amount of funds which an investor must have control over if the investment is to be carried through to its completion—is the maximum amount of capital registered during the life of the investment. In an elementary investment, it must be noted, there is no quantity that we can strictly call "the" capital: the amount of capital in the investment is a function of time. There is, however, some justification for calling the maximum figure "the" capital of the investment. The investor must have at least that quantity at the corresponding date if the investment is to be carried through; failure to have command over that quantity must mean the abandonment or sale of the investment before completion. Now, as we have seen there will be, in general, several relative maxima of the capital invested; in fact, a relative maximum will occur whenever a negative payment is made, as this reduces the amount of capital invested. One of these relative maxima will be the absolute maximum: but which it is, we cannot say without an exact knowledge of the payments series itself: there is no general rule. In the figure taken as illustration it happens to be at the point P_4; it might just as well have been at the point P_2 had the sizes of the payments, or their times, been different.

Now, if we increase the "time spread" without changing the magnitudes of the payments, we shall lower the rate of return according to equation (8); but we cannot say even in the case of one of the relative maxima whether the amount of capital it represents will be raised or lowered by the change unless we know all the dates, both new and old, of all the payments: still less do we know whether the absolute maximum has been raised or lowered, because the shift in the time positions of the various payments may dethrone the old absolute maximum and erect one of the previously inferior relative maxima in its place. Thus, if in both the old and the new positions the last relative maximum is the absolute maximum, the change in the time spread will not have changed the maximum capital at all: in both positions it is equal to the last negative payment. On the other hand, if some intermediate relative maximum is also the absolute maximum, under some conditions an increase in the time spread (without change in the payment quantities) will raise, under other conditions lower, the maximum capital employed.

This is also true of an investment of the second class of repetition, which we may call " end to end " repetition. This class of investment is quite common in everyday life. Indeed, it may be said that this case includes every investment involving the building up and ultimate expenditure of a depreciation fund. Investment in a car, a machine, a horse, where there is only one car, one machine, one horse, is of this type. The function showing the amount of capital invested at each point of time is a simple periodic repetition of the " elementary " function: the maximum capital of the elementary investment will also be the maximum of the repeated investment, and we cannot make any general proposition regarding the effect of a pure lengthening of the time spread upon the maximum capital employed.

The third class of repetition, however, which we may call *continuous* repetition, is much more tractable to analysis. Here a new element is begun every " year ", a " year " being any convenient accounting period. Then if the elementary payments series is $x_1, x_2 \dots x_n$, for the years 1, 2, ... N, the payments series of the repeated investment will be as in Table 3. Some x's will of course be positive, some negative.

TABLE 3.

Year.	Payment.
1	x_1
2	$x_2 + x_1$
3	$x_3 + x_2 + x_1$
4	$x_4 + x_3 + x_2 + x_1$
..	.. ..
N	$x_n + x_{n-1} + x_{n-2} + x_{n-3} + \dots + x_2 + x_1$
$N+1$	$x_n + x_{n-1} + x_{n-2} + \dots + x_3 + x_2 + x_1$

Clearly, after the year N the payment in each year will be constant and will be equal to the sum of all the payments of the elementary payment series. The amount of capital invested up to the year N, C_n, is the compounded sum of all preceding payments, i.e.:

$$\begin{aligned}
C_n = {} & x_1\Big[(1+i)^{n-1} + (1+i)^{n-2} + \ldots + (1+i) + 1\Big] \\
& + x_2\Big[(1+i)^{n-2} + (1+i)^{n-3} + \ldots + (1+i) + 1\Big] \\
& + \ldots + x_{n-1}\Big[(1+i) + 1\Big] + x_n \\
= {} & \frac{x_1}{i}\Big[(1+i)^n - 1\Big] + \frac{x_2}{i}\Big[(1+i)^{n-1} - 1\Big] \\
& + \ldots + \frac{x_{n-1}}{i}\Big[(1\,i\,+)^2 - 1\Big] + \frac{x_n}{i}\Big[(1+i) - 1\Big] \\
= {} & \frac{1}{i}\Big[x_1(1+i)^n + x_2(1+i)^{n-1} + \ldots \\
& \qquad + x_{n-1}(1+i)^2 + x_n(1+i)\Big] \\
& \qquad - \frac{1}{i}\Big[x_1 + x_2 + \ldots + x_n\Big]
\end{aligned}$$

Whence, as by the definition of the rate of return,

$x_1(1+i)^n + x_2(1+i)^{n-1} + \ldots + x_n(1+i) = 0$, we have

$$C_n = -\left(\frac{x_1 + x_2 + \ldots + x_n}{i}\right) \tag{13}$$

We can similarly show that $C_n = C_{n+1} = C_{n+2} =$ etc., and that $C_n > C_{n-1} > C_{n-2} >$ etc. Thus, when the continuously repeated investment is in full running order—i.e. when a new element is begun and an old element finishes each "year"—the total capital invested is constant, apart from changes within the "year" which we neglect, and is equal to the net annual negative payment divided by the rate of return. Moreover, this net annual negative payment or "net revenue" is itself equal to the algebraical sum of the terms in the payment series of the element of the investment. The time spread is constant, however long we continue the repetitions, and is equal to the time spread of the element. We can easily formulate the relationship between the time spread, the yearly net revenue, and the amount of capital employed. If M, N, are the arithmetical sums of the positive and negative payments of the element, the time spread, $\mathcal{T}$, is given by:

$$(1+i)^{\mathcal{T}} = \frac{N}{M}$$

But by equation (13), $i = \frac{N-M}{C}$, where C is the total capital.

Hence we have:

$$\mathcal{T} = \frac{Log_e \frac{N}{M}}{Log_e (1+i)} = \frac{Log_e \frac{N}{M}}{Log_e \left(1 + \frac{N-M}{C}\right)} \tag{14}$$

If we assume continuous discounting instead of yearly discounting the formula becomes much simpler: equation (14) may then be written:

$$\mathcal{T} = \frac{Log_e \frac{N}{M}}{i} = \frac{C}{N-M}\, Log_e \frac{N}{M} \tag{15}$$

If i is so small that its squares and higher powers can be neglected we can formulate an even simpler relation between the time spread and the capital invested. Writing equation (14) in the form

$$\mathcal{T} = \frac{Log_e \left(1 + \frac{N-M}{M}\right)}{Log_e \left(1 + \frac{N-M}{C}\right)},$$

expanding, and neglecting terms involving squares or higher powers of $\frac{N-M}{M}$ and $\frac{N-M}{C}$, we have:

$$\mathcal{T} = \frac{C}{M} \tag{16}$$

In equations (15) and (16), it will be noticed, if the terms of the payments series are constant—i.e. if N and M are constant—the capital is directly proportional to the time spread.

Thus, if our elementary investment is an apple tree, and our "continuous" investment is an orchard in which one tree is planted and one cut down each year, the composition of the orchard does not change from year to year, though its constituent apple trees are planted, grow, and die. The payments made each year in the whole orchard are identical in magnitude and object with the payments which constitute the investment in a single tree : the rate of return and the time spread are the same for the orchard and for a single tree, while if the time spread is altered merely by changing the dates and not the magnitudes of the payments series of the single tree, the capital invested in the orchard is directly proportional to the time spread.

This brings us to the next stage of the argument. We have so far been considering investment merely as investment—i.e. merely as a payments series between the investment and its owner. We must now carry the enquiry a stage further : for every investment ultimately rests upon, and is occasioned through, *production.* Beneath every elementary investment there lies a *process* of production, which consists of a series of *inputs*, each of which involves a *cost*, or *outlay*, and a series of *outputs*, each of which brings in a *revenue.* The cost-revenue series of a productive process underlies the positive and negative payments series of the investment which corresponds to the process. Thus suppose we take the elementary case of the production of a play. Abstracting from uncertainty, the play consists, from the economic point of view, of a number of costs at various dates—salaries, wages, royalties, rents, taxes, etc.—and a number of revenues of various dates—the receipts from the sale of tickets. In the simplest case, where there is no accumulation or decumulation of cash balances in the account of the investment, every time a cost is incurred—i.e. every time a payment is made from the account of the outside world—the investor must balance this by a positive payment equal in magnitude to the cost, paid into the account of the investment. Likewise every time a revenue comes in from the outside world, a negative payment must be made from the account of the investment in favour of the investor. Thus in this case there is a payments series, identical in magnitude but opposite in algebraical sign, which is necessitated by the cost-revenue series of the process. This payments series we shall call the "basic investment." Now, of course, once we relax the condition that the investment shall not hold a cash balance the actual payments series does not have to correspond to the basic payments series. Thus our investor may, and generally does, pay in a sum to the credit of the investment in advance of actual expenditures, while he will generally receive his returns more or less continuously, and not as revenues happen to come in. But we can formulate two propositions with certainty: that the total excess of negative over positive payments to the investor must be equal to the total excess of revenues over costs (because there can be no change in the cash balance over the whole life of the investment): and that the rate of return on the actual investment cannot exceed the rate of return in the basic investment. For if the actual and the basic payments series diverge, it is only because positive payments precede the costs which necessitate them and negative payments follow the revenues which provide them; hence the time spread must be greater in the actual than in the basic investment, and as the sum of the positive and negative payments is the same, the rate of return must be lower in the actual payments series. This would not be the case where the idle balances of the actual payments series could be invested in external investments at a rate of interest equal or greater than the rate of return; but this is unlikely, as in that event the original investment will not be made at all.

These complications, however, belong to monetary theory rather than to the theory of investment, and for the moment we can assume that the actual and the basic payments series are identical. Then the time spread of the basic payments series is the best meaning we can ascribe to the concept of the period of production in the *process*. Now, it must be emphasised that the period of production in the process is a half-physical, half economic entity which determines the time spread of the investment: the *nature* of the process in which investment is embodied *determines* the time spread of that investment: while underneath all apparently "pure" investments—i.e. investments without costs or revenues, but with positive and negative payments only—there are processes of production and "basic" payments series which "produce" the interest which the pure investment apparently pays without effort. In other words, all borrowed money is borrowed for something: the something for which it is borrowed is some productive process—a series of costs and revenues—and the rate of return in this process determines the rate of interest which the "pure" investment can pay.

To round off the argument we may consider two special cases which have given a great deal of trouble in this connection. First let us consider the case in which a single positive payment is associated with an infinite series of constant annual negative payments—i.e. where a perpetual income is bought for a capital sum. Such a series would be represented by Table 4.

TABLE 4

Year	0	1	2	3 . . . to infinity.
Payment	M	$-n$	$-n$	$-n$ . . . to infinity.

Applying equation (3) we have the rate of return given by:

$$M - n(1+i)^{-1} - n(1+i)^{-2} \ . \ . \ . \text{ to infinity, } = 0$$

Summing this infinite geometrical series we have:

$$M - \frac{n}{i} = 0, \text{ or } i = \frac{n}{M}$$

That is, the rate of return is equal to the yearly income divided by the capital sum. The total negative payment, however, is infinite, and as the rate of return is finite the time spread must also be infinite; it would clearly take an infinite time for a finite sum to grow into an infinite sum at a finite rate of growth. In this case the concept of a time spread is of no importance whatever. We must, however, be very careful to distinguish this case from the case of continuous repetition of an element of investment, which, as we have already seen, gives us an infinite series of constant *net* annual payments which may also be purchased for a constant capital sum at any date. To illustrate with the simplest example: suppose our element of investment were a positive payment m and a negative payment, $-n$ after one year; if this is repeated annually, our payments series looks like Table 5.

TABLE 5.

Date	0	1	2	3 . . . to infinity.
Payment	m	$m-n$	$m-n$	$m-n$ . . . to infinity.

The rate of return in this series is given by

$$i = \frac{n-m}{m},$$

while the time spread is one year, no matter how far the series is carried. Now, if we look only to net payments, Table 5 looks very much like Table 4; but if we consider *all* payments made in the course of an investment, a definite and significant time spread emerges. Thus a basic payments series with a definite time spread may be financed by a pure investment with an infinite time spread: but this infinite time spread is only apparent and is not characteristic of the underlying productive process. It must be admitted that cases are conceivable in which the basic payments series has an infinite time spread: the production of an immortal capital good which required no maintenance would be a case in point. But such cases are unlikely to occur in practice: even land, generally taken as the type of an immortal capital good, required constant maintenance of its qualities.

This brings us to the second special case: that in which a capital good is produced which requires maintenance. Suppose, for instance, we buy a house for £M; and suppose in each year we receive a gross rent of £n, and we have to spend £m each year in maintaining the house—i.e. in restoring it to its initial value. Then the payments series is as in Table 6.

TABLE 6.

Year	0	1	2	. . .	R
Payment	M	$-n+m$	$-n+m$		$-M-n+m$

R is the year in which we sell the house. The rate of return in this payment series is $i = \frac{n-m}{M}$. The time spread, $\mathcal{T}_r$, is given by the equation:

$$(1+i)^{\mathcal{T}_r} = \frac{M+rn}{M+rm} \tag{17}$$

Now, as r approaches infinity, $\frac{M+rn}{M+rm}$ approaches $\frac{n}{m}$. Hence, if the date of liquidation is in the indefinitely remote future, the time spread, $\mathcal{T}_\infty$, is given by:

$$(1+i)^{\mathcal{T}_\infty} = \frac{n}{m} \tag{18}$$

Equation (18) may be written in the form :

$$\mathcal{T}_{\infty} = \frac{Log\left(1 + \frac{n-m}{m}\right)}{Log\left(1 + \frac{n-m}{M}\right)} \qquad (19)$$

Now, if i is small, so that square and higher powers of i may be neglected, $n - m$ will be small, and in expanding

$$Log\left(1 + \frac{n-m}{m}\right) \text{ and } Log\left(1 + \frac{n-m}{M}\right)$$

we can neglect all terms after the first and write equation (19)

$$\mathcal{T} = \frac{M}{m}$$

That is, in the case of a capital good which requires maintenance, the time spread approaches the ratio of the cost of the good to its annual maintenance charge, as the date of liquidation recedes into the indefinitely distant future and the rate of return approaches zero. The time spread in this limiting case is the number of years for which the maintenance change will have to be made in order to make the total paid out equal the initial cost. It will be seen, therefore, that though the time spread increases as we push the date of liquidation further and further into the future, it approaches a finite limit when the date of liquidation is indefinitely remote. In any case, the time spread is a perfectly definite quantity.

To summarise our conclusions : (1) A definite, valid, and significant concept of a "period of investment" in any single investment can be found in the concept of a "time spread." (2) Where the investment is made up of a number of repetitions of an elementary investment, the time spread of the investment is equal to the time spread of the element. (3) A continuously repeated element therefore has a finite time spread, although the investment itself may proceed indefinitely into the future. (4) In a continuously repeated investment, the amount of capital invested is constant, and is directly proportional to the time spread, where change in the time spread is effected only by changing the dates and not by changing the magnitudes of the quantities of the payments series. (5) In an investment which does not consist of the continuous repetition of a finite element the capital is not constant and the maximum capital invested bears no simple and direct relation to the time spread. (6) An investment which consists of a continuously *maintained* capital good has a finite time spread, however far into the future the investment proceeds.

So far we have been dealing exclusively with the properties of a *single* investment. The question naturally arises whether we can apply these results and concepts to investment as a whole—which means to-day practically the whole of economic activity: can we, for instance, apply the concept of the time spread to the whole process of production? The problem is one of great difficulty. If we try to establish a concept of a "payments series" for the productive process as a whole we are faced with the difficulty that in the system as a whole "costs" and "revenues" are not independent, but are to a very large extent the same quantities: thus a "cost" to one process is a "revenue" to another: the "expenditure" of one person is the "income" of another, and we cannot assume for the whole economy a system of independent incomings and outgoings as we can for the individual person or the single process. This does not mean, of course, that the concept of an "average period of production" in the physical productive process is invalid, though it probably does imply that any physical "average period of production" is not capable of measurement. In the application of our results to the general theory of capital we must also be very careful, for we cannot assume in fact, as the "Austrian" school has often tended to do, that the process of production as a whole repeats itself continuously: there are elements of irregularity and discontinuity in the productive process which militate against any simple relationships between capital quantity and the time structure of the productive process. In spite of these unsolved problems, however, we cannot doubt that the connection between capital quantities and the time structure of production is very intimate. The very concept of investment involves the concept of a time interval of some kind between outlays and receipts, as we have seen, and the difficulties outlined above do not affect the fundamental conceptual relations.

THE PRACTICAL DETERMINATION OF THE RATE OF RETURN IN THE GENERAL CASE.

AN APPENDIX TO "TIME AND INVESTMENT."

The problem of the determination of the rate of interest in any given investment has never presented itself very acutely to economists. This is mainly because they have usually thought of the rate of interest in terms of two special types of investment. The first is that in which a constant yearly income is bought for a capital sum: the yearly income proceeding either to infinity or to liquidation for a capital sum equal to the original purchase price, in which case the general equation (3) reduces to the simple form

$$i = \frac{n}{M} \tag{A1}$$

i being the rate of return, n the yearly income, and M the capital sum. The second is that which consists of a single positive payment m and a single negative payment n, at one year's interval. Then equation (3) becomes:

$$1 + i = \frac{n}{m}, \text{ or } i = \frac{n}{m} - 1 \tag{A2}$$

Even where we have a single positive and a single negative payment with a number of years interval between them, T, the calculation of the rate of return is fairly easy. Thus we have

$$(1 + i)^T = \frac{n}{m}$$
$$\text{or } Log(1 + i) = \frac{1}{T} Log \frac{n}{m} \tag{A3}$$

from which $Log(1 + i)$, and therefore i, can easily be calculated with the aid of tables.

When, however, we come to the general case, where we have a number of positive payments, $m_1, m_2 \ldots m_h$, at dates $t_1, t_2, \ldots t_h$, and a number of negative payments $n_1, n_2, \ldots n_k$ at dates $s_1, s_2, \ldots s_k$, the rate of return is given by the equation:

$$m_1(1 + i)^{-t_1} + m_2 (1 + i)^{-t_2} + \ldots + m_h (1 + i)^{-t_h}$$
$$= n_1(1+i)^{-s_1} + n_2(1+i)^{-s_2} + \ldots + n_k(1+i)^{-s_k} \tag{A4}$$

It is clear that with ordinary values for the various quantities there is a value of i which satisfies this equation: it is, however, a very awkward equation to solve. Indeed, a perfectly accurate general solution is not possible unless the payments series exhibits a regular form, and this is by no means always the case. The analysis of the preceding paper, however, will enable us to obtain very simply an approximate solution which is of a degree of accuracy sufficient for all practical purposes, a solution furthermore which is capable of giving as high a degree of accuracy as we wish.

It is clear that if we can find the time centres of the positive and negative payments, and thereby the time spread of the investment, we could easily find the rate of return. For if T is the time spread, and M and N the sum of the positive and negative payments respectively, we have:

$$(1+i)^T = \frac{N}{M}, \text{ or } Log(1+i) = \frac{1}{T}(LogN - LogM) \qquad \text{(A5)}$$

which we can solve like equation (A3). Now, we cannot find the true values of the time centres without knowing the rate of return—the very thing we are trying to find: for equations (4) and (5) (page 199) which give the true value of the time centres contain i. But fortunately we have approximate formulæ for the time centres, $\bar{t}$ and $\bar{s}$, in equations (9) and 10 (page 200) which do not involve i, and which, moreover, are very easily evaluated. We can, then, find an approximate value for the time centres, and hence an approximate value for T, from equations (9) and (10). If T' is this approximate value, then

$$T' = \bar{s} - \bar{t} \qquad \text{(A6)}$$

Then putting this value of T' in equation (A5) we get an approximate value for i, say i'. The value i' is sufficiently accurate in most practical cases. In any case, the value should always be checked by evaluating

$$m_1(1+i')^{-t_1} + m_2(1+i')^{-t_2} + \ldots + m_h(1+i')^{-t_h} = V'_m \text{ and}$$

$$n_1(1+i')^{-s_1} + n_2(1+i')^{-s_2} + \ldots + n_k(1+i')^{-s_k} = V'_n \qquad \text{(A7)}$$

If $V'_m = V'_n$, then $i' = i$, the true value, and we need proceed no further. If, however, we desire to proceed to a further degree of approximation, we can do so as follows: From equations (4) and (5) (page 199) we have, if t'', s'' are the second approximations to the time centres,

$$(1+i')^{t''} = \frac{M}{V'_m}, \ (1+i')^{s''} = \frac{N}{V'_n} \qquad \text{(A8)}$$

From equations (A8) we can evaluate t'' and s'', and therefore the second approximation for the time spread, $T'' = s'' - t''$. We then have, if i'' is the second approximation for the rate of return,

$$(1+i'')^{T''} = \frac{N}{M}$$

from which we can evaluate i''. Then substituting i'' for i' in equations (A7) we obtain new values V''_m, V''_n; these should be more nearly equal to each other than V'_m and V'_n. If we desire further approximations we can go on to get i''' from V''_m and V''_n and so on *ad infinitum*, or rather until the strain on our tables of logarithms is too great. In practice, the first approximation is about as high as can be obtained with four- or even five-figure tables, and is about as much as most people would ever want, as may be seen in the following example[1].

Suppose a man buys some stock, one year from a base date, paying £100, and that a further £50 of the purchase money is called up three years after the base date. The nominal value and the nominal rate of interest are of course irrelevant; we are here concerned with actual money payments and with real rates of return. Suppose further that he gets dividends of £2, £5, £10, £6 and £3, at dates 2, 3, 4, 5, and 6 years after the base date respectively. Suppose further that he sells the stock six years after the base date for £160. What rate of return has the investment paid?

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[1] The accuracy of this first approximation is at first sight quite surprising, for it depends upon the assumption that the squares and higher powers of i can be neglected in expansion. This is, of course, by no means the case, even where i is of the magnitude of .05. The secret of this method lies in the fact that the error introduced into the values of both the time centres by this assumption is in the same direction in each case, and is of the same order of magnitude in each case. The error in the *difference* between the time centres—i.e. the time spread—is therefore less than the error in the time centres themselves. This is not the case when there is only a single positive or a single negative payment, in which case the position of one of the time centres is exactly fixed by the position of the single payment, but the error becomes less when the number of positive payments approximates to the number of negative payments.

We first tabulate the history of the investment thus :—

TABLE A1.

Date (t_r)	*Positive payments* (m_r) £	$t_r m_r$	*Negative payments* (n_r) £	$t_r n_r$
1	100	100	–	–
2	–	–	2	4
3	50	150	5	15
4	–	–	10	40
5	–	–	6	30
6	–	–	3	18
6	–	–	160	960
Totals	150	250	186	1,067

As a first approximation, by equations (9) and (10) we have :

$$\bar{t} = \frac{\Sigma t_r\, m_r}{M} = \frac{250}{150} = 1.66666(7)$$

$$\bar{s} = \frac{s_r\, n_r}{N} = \frac{1067}{186} = 5.73655(9)$$

Whence,

$$T' = \bar{s} - \bar{t} = 4.06989(2)$$

Then :

$$Log(1 + i') = \frac{Log186 - Log150}{4.06989(2)} = .022954$$

Whence,

$$i' = .0543 = \underline{5.43\%}\text{ p.a.}$$

We now proceed to evaluate V'_m and V'_n, the following tabular form being convenient :—

TABLE A2.

Calculation of V'_m.

t_r	m_r	$-t_r\, Log(1 + i')$	$(1 + i')^{-t_r}$	$m_r(1+i')^{-t_r}$
1	100	$-.022954 = \bar{1}.977046$	.94851(5)	94.851(5)
3	50	$-.068862 = \bar{1}.931138$	.85337(6)	42.668(8)

Total $= V'_m = 137.52(03)$

TABLE A3.

Calculation of V'_n.

s_r	n_r	$-s_r Log(1+i')$	$(1+i')^{-s_r}$	$n_r(1+i')^{-s_r}$
2	2	$-.045908 = \bar{1}.954092$	.89968(4)	1.799(4)
3	5	$-.068862 = \bar{1}.931138$	.85337(6)	4.266(9)
4	10	$-.091816 = \bar{1}.908194$	.80946(8)	8.094(7)
5	6	$-.114770 = \bar{1}.885230$	.76776(7)	4.606(6)
6	163	$-.137724 = \bar{1}.862276$	.72824(3)	118.703(6)
				Total $= V'_n =$ 137.47(12)

In the above example five-figure tables have been used, and it will be seen that the result is remarkably accurate: V'_m and V'_n are equal to four significant figures and differ only in the fifth figure, which is open to a measure of doubt in any case: the result is certainly as accurate as could possibly be obtained with four-figure tables. For most practical purposes there is no need to carry the approximation any further. If, however, we wish to proceed to the second approximation, we should proceed thus:—

We have from equations (A8):

$$s'' = \frac{Log 186 - Log 137.47}{.022954} = 5.7200$$

$$t'' = \frac{Log 150 - Log 137.52}{.022954} = 1.6437$$

Whence,

$$T'' = s'' - t'' = 4.0763$$

Then,

$$Log(1 + i'') = \frac{Log 186 - Log 150}{4.0763} = .022918(3)$$

This gives us

$$i'' = .0542 = 5.42\% \text{ p.a.}$$

We can see that this is a more correct result by calculating V''_m and V''_n, thus:

TABLE A4.

Calculation of V''_m.

t_r	m_r	$-t_r Log(1+i'')$	$(1+i'')^{-t_r}$	$m_r(1+i'')^{-t_r}$
1	100	$-.0229183 = \bar{1}.977082$	.948603	94.860(3)
3	50	$-.0687549 = \bar{1}.931245$	.853590	42.679(5)
				Total $= V''_m =$ 137.53(98)

TABLE A5.

Calculation of V''_n.

s_r	n_r	$-s_r \, Log(1+i'')$	$(1+i'')^{-s_r}$	$n_r(1+i'')^{-s_r}$
2	2	$-.0458366 = \bar{1}.954163$	.899813	1.799(63)
3	5	$-.0687549 = \bar{1}.931245$	.853590	4.267(95)
4	10	$-.0916732 = \bar{1}.908327$	.809712	8.097(12)
5	6	$-.1145915 = \bar{1}.885408$	.768080	4.608(48)
6	163	$-.1375098 = \bar{1}.862490$	.728600	118.761(80)
			Total = V''_n =	137.53(49)

V''_m and V''_n are equal for as many significant figures as we have in our tables, and therefore with five-figure tables i'' is as accurate a value as we can obtain. With more accurate tables of course a greater degree of accuracy could be obtained by further approximations, but it is difficult to see what practical purposes further approximations would serve.

The practical usefulness of the above methods may be considerable: a single example will serve to illustrate. Mr. Walsh, in his interesting study of "The capital concept applied to man" (*Q. J. E.*, February, 1935) made a comparison between the profitability of various lines of investment in human education. He did this by taking in each case the costs, at various dates, of obtaining the particular education in question, and the "revenues," at various dates, or average excess income attributable to the education in question. He then compared the present value of both costs and revenues at a given date, using an arbitrary rate of interest (4 per cent.) in finding the present values. There is, of course, no objection to this method as a method of comparison, but it would at least be more elegant to be able to express the results in the form of the actual rates of return yielded by the various forms of education—i.e. the rate of compounding or discounting in each case which would make the present value of the costs at a given date exactly equal to the present value at that date of the revenues. The method outlined above would provide a simple means of finding these rates of return.

An Empirical Analysis of the Laws of Distribution[1]

By J. Marschak

When Goethe visited, in 1786, the amphitheatre of Verona, he meditated on its crater shape:

> "Whenever something spectacular happens in an open place and everybody rushes to see it those at the back try, in every possible way, to climb higher than those in front: they jump on to benches, roll barrels together, drive up carts, bridge the gaps with planks, swarm on to a near-by hill, and thus in no time a crater is formed. If the spectacle often occurs on the same spot some light structure is put up." (*Italienische Reise.*)

Here the crater-like shape of the amphitheatre appears as one of those "empty boxes," which any generalising, *a priori* description of rational activities of massed men purports to construct. Thus, the falling "normal" demand curve, the ascending long-run supply curve, etc., have been called "empty boxes." But, after all, they are not absolutely empty. Either simply because they are not absolutely *a priori* but contain precisely that amount of our empirical knowledge of human behaviour which we have put into them, or because (as, I believe, modern Phenomenology thinks) to be *a priori* is, even outside the domain of mathematical intuition, not necessarily the same as to be void of new contents. Whatever the case may be, we certainly learn from Pure Economics a few things not altogether banal. The *first* thing worth knowing is the "determinateness" of a system. We learn (by a process of thought which, in its mathematical transcription, reduces to the counting of "unknowns" and of equations) whether a problem is "fully explained," i.e. whether a given set of conditions fully determine the set of facts to be explained, so that none of the given conditions is superfluous and no further ones are needed. That certain conditions are likely to produce certain human reactions, this is of course a postulate akin to Goethe's statement that "those at the back try to climb over those in the front." Certainly we are not rich in reasonable postulates of this sort. We know, e.g., that a prospect of high profits in the future tends to increase the entrepreneurs' activity in the present. But we have no well founded answer to the more important question, how often the entrepreneurs conclude from high profits realised in the past that high profits will accrue in the future. We know almost nothing of the direction (let alone the amount) in which the interest-rate influences the supply of capital, or the wage-rate the supply of labour. We know, therefore, sometimes very little about the solutions of a system even if we are able to state whether it is a determinate one. Yet we can, in most cases, exhaust the list of possible alternative postulates—e.g. by calling up that all-exhaustive triad, " More, Less, and Equal "—and arrive thus at a list of possible alternative solutions.

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[1] *The Theory of Wages*, by Paul H. Douglas, Professor of Economics in the University of Chicago. The Macmillan Company, New York. 1934. xviii + 502 pp., with a Statistical Appendix and a Bibliography.

Therefore, with or without those postulates which aspire at being immediate and infallible messengers of a banal Truth—with or without this well-fed but uninteresting Bourgeoisie—the *second* task of Pure Economics can be performed: the investigation of the *signs*. We analyse the rate of change of one magnitude with respect to another; if it is positive, we have an increasing, otherwise a decreasing, or a constant, function. We analyse the sign of the rate of change of this rate of change in order to see whether the function at its turning point is at its maximum (which, in Economics, in many cases means stable equilibrium), or at its minimum (which often means an unstable equilibrium). The answer we find in the " box " will be categorical or optional according to whether the postulates which we had put into it were categorical or optional.

Hier stock' ich schon. No further does Pure Economics lead. If its results are optional, which of the alternatives is the most probable? But even if some solutions are categorical, as far as signs are concerned; even if we know that certain forces, when considered in isolation, always produce, *ceteris paribus*, effects in a certain and not in an opposite direction, knowledge of this sort still leaves us as helpless as before, when we try to find the direction (let alone the amount) of the composite results of mutually opposed forces. What we really need to know is the numerical values, not only the signs, of our magnitudes. Now, even for the first two tasks we have described, viz. the study of determinateness and of signs, the common knowledge of human behaviour does not always supply sufficient raw material. For the *third* task, the *numerical* analysis, an extension of our knowledge of facts is simply indispensable.

Two sorts of amphitheatrically-shaped diagrams have become, in recent times, more popular among economists than they were before. The one deals with the subjective, the other with the objective data of the economic system. The " indifference-map " describes the state of a man's taste in terms of all the commodities at his choice; the " productivity-map " describes the state of technique, i.e. the possible amounts of production in terms of all the accessible factors of production. These maps are less familiar to the readers of Marshall than the " elasticities." The latter measure the ratios between mutually connected relative changes of two magnitudes: such as the demand and the price; or the supply and the cost; or the quantity of a factor used and of the output produced. Elasticities can be easily obtained from the "maps," which are indeed a more comprehensive method of description.

Professor Douglas' book, in its first two parts, is a bold attempt to find, by the use of statistical data, the shape of the production map—and, hence, the magnitude of the elasticity of the product with respect to either capital or labour—for U.S.A. in 1890–1922; for Massachusetts 1890–1926; and for New South Wales 1901–1927. For the two American areas he gets $\frac{3}{4}$ and $\frac{1}{4}$ as the elasticities of the product with respect to labour and capital respectively; for New South Wales the figures are $\frac{2}{3}$ and $\frac{1}{3}$. "During the period from 1890 to 1922 an increase of 1 per cent. in the quantity of labour in manufacturing in the United States, with the quantity of capital constant, would normally lead to an increase of $\frac{3}{4}$ per cent. in physical product," etc.[1] The main statistical source was the Census of Production, but further subsidiary sources (for interpolating between the census years, etc.) were also used.

If, or so long as, the formula is true, it is possible to calculate from it, for each given amount of capital and of working population, not only the total product but also the rates of marginal returns to labour and capital, i.e. the wage-rate and (as Professor Douglas thinks) the interest-rate.[2] Thus the influence of the wage-rate demanded on the amount of labour employable, i.e. the demand function for labour, can be derived from the formula for the above "production map." And, similarly, Professor Douglas claims to have derived a demand function for what he calls capital.

Thus, the production map and its derivates, the *demand* functions for labour and capital, are the result of Part I (theoretical) and Part II (numerical) of his work. It is duly completed, in Part III, by an admirable, theoretical and numerical analysis of the *supply* side of the factors of production. He studies the short-run supply of labour (response of the proportion employed, and of the hours of work, to wage-rates); the long-run supply of labour (response of the population movement to wage-rates); and the supply of savings in response to interest-rates, and of natural resources. The brilliant critical summaries of the discussions of the relationship between poverty and fertility, and between interest-rate and thrift, can hardly be surpassed in both comprehensiveness and clearness.

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[1] Professor Douglas' formula, for U.S.A., is

$$P = 1{,}01 \; L^{\frac{3}{4}} C^{\frac{1}{4}} \text{ (approximately)};$$

where P is the total physical product, L the amount of labour employed and C the amount of physical capital in existence; the average amounts of each of these magnitudes for a certain basic period being taken as arbitrary units. The fact that the factor 1,01 happens to be equal in all the three investigations should not mean much, as it obviously depends on the units chosen.

[2] The theoretical total shares of labour and capital in the total income then work out, by easy algebra, equal to the respective elasticities—i.e., in U.S.A.: $\frac{3}{4}$ and $\frac{1}{4}$ of the product—which result Professor Douglas tries to check by income-statistics.

No doubt, some further relationships not included in Professor Douglas' list might prove relevant to a still more realistic description of the equilibrium of the factors of production. E.g. the effect of the income-distribution on the quantities of different goods consumed, and, therefore, on the shape of the production function, ought to be studied. Further, Professor Douglas' assumption of perfect competition between entrepreneurs—and, accordingly, the general form of his formula, which is based on this assumption—should be treated as a first approximation only. Finally, the analysis of equilibrium should be supplemented by the analysis of disequilibria lest certain facts correctly observed by politicians (e.g. the fact that the poor are in general the non-hoarders) should remain, for all their practical importance, a mere " disturbing factor " to economic experts. Yet, the bold plan of Professor Douglas is well rounded-off in itself because it does embrace a set of conditions—the demand and supply functions —which, taken by themselves, would fully determine the facts in question, viz. labour and capital employed, amount produced, wage- and interest-rates. Readers not versed in equilibrium theories will learn from the mere architecture of this book that many of the popular theories of wages are half-theories, or, to use Marshall's simile, half-scissors.

Pure theory has helped Professor Douglas to select carefully the necessary number of relationships for a given number of unknowns. His production map itself is, at least partly, taken from a box of pure theory. It is based on the theorem advanced by Wicksteed and others and perfected by Wicksell (and recently by Dr. Hicks): that under free competition between entrepreneurs the " returns to the scale " (as distinct from the returns to a single factor) must, in equilibrium, be constant. If this were not the case too large enterprises would be split up in smaller ones, and the enterprises too small would merge together to larger ones. A double amount of all factors must, therefore, result in a double product. This theorem limits the field of possible production functions to the " homogeneous linear " ones, i.e. to functions which double if all their independent variables double. Out of this still indefinite field Professor Douglas selects, for the sake of convenience, those with elasticities independent of the amounts, i.e. the functions of the type $P = b . L^k C^{1-k}$. Ultimately he finds, by the " method of least squares ", that $k = \frac{3}{4}$ suits better than any other value the facts for U.S.A.

The reasoning thus consists of three steps: a theoretical selection; a further selection from the point of view of convenience; and a final selection, by statistical methods.

The first, or theoretical, step of Professor Douglas, viz. the use of the " box " called " constant returns to scale " provokes a theoretical objection. Capital, in a sense of the total value of physical goods used in production, can hardly be considered as a strictly independent variable, since it depends on the way in which the invested labour is distributed in time. It is nearer the truth to regard as independent factors of production all the different amounts of labour invested at different times (*cf.* Wicksell, *Lectures*, Vol. I, pp. 203–4). If, then, we assume, with Professor Douglas, free entry into industry, we should say that the product is a " homogeneous linear function " of these separate labour-amounts ; and a mathematical expression of this in terms of the variables, total labour and " capital " (the latter being the value of all labour amounts invested in the existing stock of goods *plus* compound interest on them) would *not* lead to a homogeneous linear function of these two variables. The above formula loses therefore a great deal of its *a priori* plausibility.[1] Yet this objection is of less weight for fixed capital than for circulating capital. In fact the fixed capital reflects changes in the time-distribution of labour rather slowly, and thus (think of railways and harbours !) tends to approach " land." And, as Professor Douglas (although not very consistently and for not very clear reasons) excludes the circulating capital at least from the more important of his statistical calculations, the objection does not in itself invalidate his results.

If Professor Douglas' theoretical step can, therefore, be vindicated, at least as a first approximation, this is even more true of his assumption of independent elasticities. It would be futile, with the data at our disposal, to attempt any more ambitious degree of approximation.

Our more substantial objection refers, however, to Professor Douglas' third step : his insertion of numerical values into his formula by " fitting curves " to statistical data. Such a " fitting " is always based on the assumption that the observed variations of data are due, in substance, *not* to changes in the relationship itself (which is under study), but to changes in some other relationships.[2] Accordingly, in Part II of Professor Douglas' book a function is " fitted " to the figures of production, " capital," and employed labour under the implicit assumption that their changes are due, not to changes in technical structure (which is indeed the function to be found), but to *other* changes, viz. the changes of some causes (movement of population, of savings, etc.) determining the supply of labour and capital at given reward-rates. In Part III, however, the supply of labour, and of savings, undergoes a similar procedure of " fitting." It rests, again, on a similar assumption : that supply functions themselves (which are the functions to be found) remain unmoved, the changes in the figures being provoked from the demand side only, i.e. in the first resort (so long as we deal with " statics " only and ignore the vagaries of the entrepreneurs' mood): by changes of production-technique.

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[1] Incidentally, Professor Douglas' attempt to check it by using income-statistics (see last footnote) rests on Thünen's conception of the interest-rate as the rate of marginal returns on physical capital. This idea is, however, not compatible with Wicksell's capital analysis as reported above. Professor Douglas' check appears to me, therefore, theoretically less convincing than to him.

[2] *Cf.* E. Working : " What do statistical demand curves show ? " *Quarterly Journal of Economics*, 1927. R. Frisch : *Pitfalls in the Statistical Construction of Demand and Supply Curves.* Leipzig, 1933.

Again, even this objection does not perhaps decide the final fate of Professor Douglas' method, but only calls for certain safeguards. Strictly speaking, the " fitting of curves " to statistical data may apply, even if the relationships under consideration are not absolutely stable but only relatively more stable in comparison with all the other relationships. As different data are used in Professor Douglas' production (and demand) analysis and in his analysis of the supply of factors, it is perhaps not impossible to find sets of data which in one case show relatively more violent shifts of supply, and in the other relatively more violent shifts of demand. The relationships described would then, of course, belong to two different states of equilibrium. But this is all right. It is logically obvious that if we should set out to describe all the relationships constituting *one* equilibrium state we should not be able to find statistical time-series, since a time-series always implies some changes. If we find a formula for the production function in U.S.A., 1890–1922, on the assumption of stable technique we cannot supplement it by a labour demand formula, which would assume, for the same area and period, an unstable technique. But we can try the latter assumption for some other area and period.

It should be clear from this discussion that " econometric " functions can never have the ambition to be as eternal as Dante's Gate. Those functions are nothing else than short-hand records of massed historical facts. And they have a value as forecasting instruments only in so far—yes, in so far as history *does* repeat itself.

Book Reviews

Marktform und Gleichgewicht. By H. VON STACKELBERG. Vienna: Julius Springer. 1934. 138 pp. Rm. 9.60.

This book is much the most comprehensive work that has yet appeared on imperfect markets. It gives an admirable classification of all conceivable market situations, a separate analysis relating to each, an examination of their interrelations, and finally a synthesis which reduces all cases to a limited number of standard types. Moreover it covers the ground three or four times over, in different ways of exposition: first verbally, then with greater exactitude geometrically, this is fortified by arithmetical illustrations, while finally the whole material is put in terms of mathematics. Even those who prefer the "comparative" to the "positive" method will find a section to suit their taste, where the author's views are gradually revealed through a description of the development of the theory itself. It is in many ways a remarkable book; for Dr. Stackelberg combines thoroughness, ingenuity, and powers of synthesis to an exceptional degree; though unfortunately nearly all his conclusions are vitiated by a certain irrational interpretation of the nature of rational behaviour.

Beginning with the general analysis of types of markets, Dr. Stackelberg distinguishes, apart from perfect competition, between buyer's monopoly, seller's monopoly, buyer's and seller's oligopoly, bilateral monopoly and bilateral oligopoly: these exhausting the list when we consider a *single market.* Then come the further cases introduced by the existence of interdependence between several markets: and here we have three standard types: (i) two buyers' monopolies with an interrelated supply; (ii) two sellers' monopolies with an interrelated demand—in this category fall most of the recent writings on imperfect or monopolistic competition—and finally (iii), the intermediary bilateral monopoly, where a monopolistic seller is confronted with purely competitive buyers, who in turn sell, again competitively, to a monopolistic buyer. The market-interrelation in the first two cases might be either of a "complementary" or a "competitive" character; it might be of the "first," "second" or "third" order; the monopolies in question might all be oligopolies; while finally a certain market situation might include elements of several types simultaneously: but all these are complications which can be built up from these simpler standard types.

Now Dr. Stackelberg shows—and up to a certain point, no doubt, successfully—that the analysis of all these situations must be based on, and can be reduced to, the general theory of duopoly; and it thus merely requires a presentation of the classical duopoly case in a more general form in order to make it applicable to all the more complicated instances. For oligopoly is merely an extended form of duopoly; buyer's duopoly and seller's duopoly differ only in the shapes of curves, but not in the principle of reasoning involved; while the case of interrelated markets is again merely a modified form of buyer's or seller's duopoly. Thus Dr. Stackelberg shows that if we classify the Cournotian reaction-curves (i.e. the curves showing the optimal quantity—bought or sold—of A as a function of the given quantity—demanded or supplied—by B) in four standard types, this will cover not only all the conceivable market relations, but all possible cost conditions as well. These four types are determined by the fact that the reaction-curves can either rise or fall from left to right, while the " line of preference " along a reaction curve might be either upwards or downwards.[1] Since either duopolist might belong to any of these four categories, this gives us altogether ten different cases to deal with; in all of which the analysis proceeds by distinguishing between three stages, differing in respect to the degree of intelligence of the duopolists. It will be sufficient to examine the situation in the classical duopoly case, where the reaction curves fall from left to right while the line of preference is downwards. In this case the three stages are :—(1) The " Cournot solution " where each duopolist regards his competitor's output as independent of his own; he therefore acts on his own reaction curve (=adjusts his own output to any given output of the other). This gives a unique solution, determined by the intersection of the two curves. But according to Dr. Stackelberg such a solution is only temporary: since as soon as one of the producers realises that the other changes his output each time he changes his own, he will no longer be satisfied with moving along his own reaction curve, but he will move to the optimal point (for him) of the reaction curve of the other duopolist. This yields Case (2), The " asymetrical solution," where both A and B operate on B's reaction curve, i.e. A forces B to move to that point on his own reaction curve, where this curve is tangential to one of A's indifference curves. In this case A will be in a position of " independence " and B will be in a position of " dependence " (Abhängigkeit) with A securing the larger share of whatever advantage there is to be secured. This again is a unique, and under its assumptions, stable solution, but again it can only be temporary: since as soon as B realises what A already knows he will no longer be content with his position of inferiority. Thus this situation will ultimately and inevitably give way to Case (3), The " Edgeworth-Bowley " solution, where both duopolists assert, or attempt to assert, their independence, which implies, according to Dr. Stackelberg, that both regard the other's Cournotian reaction curve as given and try to act upon it simultaneously. This, of course, means catastrophe so far as equilibrium, stability, etc., are concerned, since it leads to the situation which is the least advantageous to both of them. It will sooner or later ruin them ; and apart from the fate of the individual duopolists and their unlucky dependents, the whole capitalist system also goes under in consequence.

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[1] These reaction curves might stand either for quantities or prices: this does not make any difference to the analysis; though Dr. Stackelberg tries to show also under what conditions duopolists will follow a price-determining and under what conditions an output-determining policy.

Since Dr. Stackelberg derives an entire political and economic philosophy from this *Gedankengang*, it is well to retrace his steps carefully. The maximum profit motive, so runs the argument, will gradually make producers realise more and more the indirect, as well as the direct consequences of their actions ; and the further this realisation proceeds—the more the market is " rationalised "—the less is the likelihood of a stable equilibrium being established. In the limit, the classical assumption of " perfect knowledge " will admit no equilibrium position at all. There is a stable equilibrium position in Case 1—where both producers are ignorant—and also in Case 2—where intelligence is entirely confined to one side—but none in Case 3, where the position of equilibrium not only involves the minimisation of profits but also the knowledge on behalf of the producers that they are actually minimising it (whereas in the previous two cases the producers at least believed that they were maximising their profits, even if they did not). Thus all markets which do not approximately realise perfect competition are " *gleichgewichtslose Märkte*," which are incompatible with the " basic principles of free capitalist economy." If they functioned as smoothly as economic theory generally assumes markets to function, they would not function at all ; " the real economy, in so far as oligopolies and bilateral monopolies exist in it functions not in despite of frictions, but on account of them." But the longer such situations persist, the more important will be the consequences of this fundamental instability ; and sooner or later they will make the continued operation of free capitalism impossible. Nor are cartel-agreements, far reaching trustifications, etc., a remedy to this ; they merely transform the game into a battle of giants.

This picture is indeed gloomy, but is it really so inevitable ? Granted that producers necessarily tend to become more intelligent as they accumulate experience, will they end up where Dr. Stackelberg makes them end up ? He starts by assuming that each producer regards the other's output as given, and finishes up by assuming that each regards the other's Cournotian reaction curve as given, i.e. each assumes that the other assumes that his output is independent from hers. (I have made Producer A a woman—to avoid confusion.) This certainly brings the game abruptly to an end ; since both cannot assume this simultaneously and still go on. But why assume this case to represent the " ultimate degree of rationality " ? Under the circumstances this assumption is just as untrue to fact as was the first. So why not go on and assume that he assumes that she assumes that he assumes that her output was independent from his ? The picture you then get will be a very different one ; and although such a "Case 4" will still not represent the ultimate truth, it will at any rate be much nearer to this ideal than Dr. Stackelberg's Case 3. If one assumes the producers to be too intelligent to remain within the framework of Cases 1 and 2, one might at least give them credit to be able to reach beyond Case 3—especially since the urge to get out of Case 3 must be much stronger than the urge to get out of Cases 1 and 2. But Dr. Stackelberg evidently regards this as impossible ; the strong terms in which he condemns Mr. Harrod leave little doubt on his views on this point.

The upshot of all this is that there appears to be really no necessity why an increased degree of rationality should lead producers into such ridiculous behaviour. Wisdom, if not intelligence, will prevent them from pursuing too agitatedly this elusive will-o'-the-wisp the "position of maximum profits"—or rather they will recognise its elusiveness at a pretty early stage of their experience. They will measure up their relative strength rather thoroughly before they engage in a price war ; and many a producer will gladly remain in a "position of dependence" even after he has learnt to distinguish between the different Cournotian curves. The danger, as I see it, is rather the other way round : not that there will be too much price war, but too little ; the risks attendant upon price competition will gradually induce producers to give up competing on the basis of price and concentrate instead on the alternatives of competing by means of product-variation and advertisement. This may be the price we have to pay for a reasonable degree of stability ; and one might wonder whether it is an attractive price.

And here we come to one serious limitation of Dr. Stackelberg's analysis (its other defect about the incompatibility of oligopoly and capitalism can be easily taken care of) : that despite all his thoroughness in exploring the consequences of imperfect markets, he leaves the problems of product-variation entirely out of account. His firms are firmly "fixed to the ground" : they may prosper or suffer, but they neither die nor are they born ; they never think of changing their "product" or the numbers of different goods produced. This limitation not only simplifies, but distorts his analysis ; so that his attempt to reduce the whole problem to the theory of duopoly, for all its beauty and ingenuity, may prove, after all, too simple.

In spite of these reservations, the reading of Dr. Stackelberg's treatise can only be heartily recommended. There is little danger that it will turn readers into Fascists, except those who already have such inclinations : while it should have the power of a revelation to those simple-minded people who think that they can settle the problem of monopolistic markets merely by altering the shape of Marshallian curves. It deserves to be translated into English.

NICHOLAS KALDOR.

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India's Economic Position and Policy in Relation to the New Constitution

By Vera Anstey

I

Introduction

The issue of Sir Otto Niemeyer's report on the finances of India[1] marks the end of the immense series of enquiries and discussions preceding and necessitated by the introduction of the new Indian Constitution. At the same time the economic conditions laid down as necessary preliminaries to the inauguration of Provincial Autonomy and the Federation have now been substantially fulfilled, so that the scene is set for that inauguration, and all that it entails. The two new Provinces—Orissa and Sind—have already been established, Provincial elections will be held this autumn, Provincial autonomy is to follow in the spring of 1937, and the Federation will be set up when the accession of sufficient Indian States has been secured.[2]

The inauguration of constitutional reforms as far-reaching as those of the Government of India Act, 1935, must inevitably affect economic life and policy fundamentally, both by means of the actual economic and financial provisions contained therein, through changes in the balance of political power and hence in the control of economic policy, and by the influence exerted by the new constitutional situation on the attitude of Indian politicians.

The object of the following pages is to take stock of India's economic situation and problems, and to discuss the probable economic repercussions of the new Constitution.

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[1] Cmd 5163, 6th April, 1936.

[2] It is expected that this will be within two years.

II

India's Fundamental Economic Problems and the New Constitutional Position

In the first place it must be realised that India is not only still predominantly agricultural, but—in spite of the recent establishment of new industries and rapid development in industrial output—no tendency can yet be discerned for industry to employ any larger proportion of the population. It can be said that, if allowance is made for changes in the basis of enumeration, since 1901 the proportions of the population dependent upon agriculture and industry respectively have remained practically stable at about 70 per cent. and 10 per cent. ; i.e. that the rate of increase of industrial employment has only just about kept pace with that of the population. This has occurred during decades of slow population growth ; under "free trade" and under a system of high revenue and protective tariffs. It can reasonably be inferred not only that at present India's prosperity depends primarily upon the fortunes of the agricultural classes, but that—even with the continuance and intensification of protection—no substantial change in this respect can be expected for many decades. Industrialisation, however desirable for other reasons, cannot be expected either to relieve the existing pressure upon the soil, or to solve the problem of widespread underemployment.

The present tendency for any increase in productivity to result mainly in merely keeping alive a larger population (under wretched conditions and with an almost incredibly small average income), not only limits the possibility of improving the standard of life, but also determines what are appropriate types of reform. Nevertheless the problem should not be viewed too pessimistically. Under existing conditions it is almost inconceivable that any substantial increase in population can occur in the absence of at least a proportionate increase of productivity, and probably of some improvement in the standard of life. Thus the exceptionally high rate of increase in population since 1921 itself suggests considerable economic improvement, whilst circumstantial and other evidence points to a definite (though regrettably small) improvement in the standard of life since 1900, at least up to 1929.[1] The tendency, amongst those who recognise the fundamental importance of the population problem in India, is to suggest that little or no improvement in the standard of life can be expected until the birth-control movement has made substantial headway. Although this movement has started in India it can hardly be expected to affect more than a negligible portion even of the urban population for many decades. But this is no reason for despair. In the West not only did the standard of life improve substantially before the widespread adoption of birth-control, but—as Dr. Charles has recently shown[1]—it has yet to be proved how much of the decline in the birth-rate in the West can be attributed to contraceptive measures, which had been known for at least 50 years before the birth-rate began to decline. The conclusion is that even in the absence of birth-control a fairly rapid increase in average prosperity can, under certain circumstances, be secured, and that this improvement in itself either tends (for reasons not yet fully understood) to limit the size of families, or tends towards the adoption of birth-control. My contention is that what has occurred in the West may also, in time, occur in India, that already a step has been taken in the right direction, and that what is required is to attempt to give an upward jerk to productivity and conditions of life which—in India—means primarily agricultural productivity and conditions of life.

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[1] The evidence for this statement is given in detail in my *Economic Development of India.*

It is necessary to emphasise the importance of agriculture however obvious this may appear, because of the disproportionate influence wielded in the past by the representatives of urban, commercial, industrial and absentee landlord interests, with the result that the pressure exerted on the Government of India has come largely from this small minority; and because under the new Constitution the power of this minority may prove greater than ever. In so far as the interests of actual cultivators have in the past been specially considered, this has been mainly on the initiative of the "alien Government," not of articulate public opinion. It is only quite recently that Gandhi through his "Indian Village Industries Association," and a small Peasants' Party (led by members of the socialist-communist group within the India Congress) have begun to formulate programmes of rural improvement. The former advocates voluntary rural self-help, and the latter proposes a series of legislative reforms, affecting tenures, land revenue, rents, the size of holdings, taxation of the peasantry, Village Panchayats, rural industries, and indebtedness.[1]

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[1] *The Twilight of Parenthood.*

One of the most weighty criticisms of the new Constitution is that it contains nothing specifically designed to promote the well-being of the masses, and that it may even make ameliorative action more difficult by increasing financial stringency, by leading to party groupings which may result in neglect of rural interests, and by the complete delegation of land and agricultural problems to the Provinces, some of which (especially where bi-cameral Legislatures are to be instituted) may be dominated, or at least limited, by undemocratic landlord influence.[2] Moreover, greater Provincial independence may, in the sphere of social reform, necessitate a series of local struggles, more difficult to win than one struggle at the centre. The answer to this criticism is that national energy cannot be directed towards social reform and regeneration until it has ceased to be "side-tracked" into political agitation, and until a Government is formed which—unlike the alien Government of the past—is in a position to make a frontal attack on institutions and customs which have led to grave social and economic evils. But the question is whether or not the new Constitution will produce a Government not only strong enough, but determined to undertake far-reaching reforms. For instance, although some of the principles and remedies supported by Gandhi and the Peasants' Group contain much that is wise and appropriate, the likelihood of their application depends largely upon whether they obtain a place upon the programme of a powerful party, or whether they are supported only by small cliques, or by those who propose to wreck the Constitution by "opposition from within." At present the chief advocates of rural reconstruction within the Indian Congress are to be found within the latter camp, whilst less radical members recognise that Congress has received much financial support from "capitalists," and wish to seek to retain this support.

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[1] A number of Provincial and district Peasants' organisations already exist, an attempt is being made to form an All-India Federation, and there is a Peasants' Group within the Legislative Assembly. See the publications of the South Indian Federation of Workers and Peasantry.

[2] It is, for instance, argued that the new Constitution pretends to empower the future Provincial Legislatures to raise income-tax from the larger agricultural incomes, whilst actually making this impossible by the institution of bi-cameral Legislatures.

It is hardly necessary to prove or illustrate the existing pressure of population on the land. It is universally recognised that the subdivision of holdings, which has been proceeding for generations, has extended until many of them are too small to be economic, which means that many peasant families cannot subsist without earnings from other sources.[1] At the same time there has been a great increase in the rural proletariat, whilst the extent of "under-employment" on the land has become proverbial, and is still the chief manifestation in India of difficulties which in the West result in "unemployment."[2] Industrial labourers, as in the West, offer fairly successful opposition to wage-reductions more than proportionate to any fall in the cost of living, whilst those thrown out of industrial employment mostly return to their villages, thus aggravating the situation in rural areas.

The superfluity of labour underlies the whole problem of agricultural improvement in India. In the West efficiency has been increased and costs reduced by labour-saving devices. In India labour is by far the cheapest factor of production, and it is questionable whether labour-saving devices can reduce costs. To establish "economic" holdings, and introduce labour-saving devices, would simply aggravate the employment problem, in the absence of any hope of a corresponding increase in demand for labour from other sources such as industry. Methods involving the more intensive application of hand-labour, such as are already used in the Far East, together with the introduction of improved hand implements, the more extensive construction and use of small-scale irrigation and drainage schemes, if supplemented by the introduction of by-industries (particularly those concerned with animal husbandry, dairy-farming, and the processing of agricultural products) might prove far more appropriate. There is, indeed, much wisdom in Gandhi's advocacy of hand-spinning and weaving, as any additional earnings, or savings in expenditure, are advantageous (however small the return to labour) if the time and energy involved would otherwise be entirely wasted.

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[1] It has been estimated that if holdings were rearranged on an "economic" basis, more than 50 per cent. of the present occupiers would be displaced.

[2] The Western "unemployment" problem has so far assumed serious proportions in India only amongst the middle classes. Many members of the middle classes are unable to obtain work, however humble. Their failure cannot be attributed to prejudice against manual labour, as preference is given to the (more docile) uneducated for such work by employers.

Under existing conditions labour costs fall, at certain seasons, practically to zero.

Although modern forms of industrial production and organisation have so far touched only the fringe of the population, notable and rapid progress has recently been made in the output of the chief organised industries, even since the depression of 1929. It has been estimated that the volume of such output increased from a basis of 100 for the average of the years 1920–21 and 1921–22, to no less than 151 for the average of the years 1930–31 and 1931–32, and by 44 per cent. between 1928–29 and 1934–35.[1] The latter has been compared with an increase of 6½ per cent. in Great Britain, and with a decline of 25 per cent. in France, 15 per cent. in Germany and 20 per cent. in the United States during the same period.[2] The output of piece-goods by Indian mills increased 41 per cent. between 1928 and 1934, compared with an increase of 34 per cent. in Japan and a decline in most competing countries.[3] In 1913 India imported three-quarters and herself produced only one-third of her total consumption of mill-made cotton goods, but the position has now been reversed. India's output of steel increased 75 per cent. between 1928 and 1934, compared with an increase of 55 per cent. in Japan, a decline of 54 per cent. in the United States, of 30 per cent. in France, and 20 per cent. in Great Britain.[4] Whereas in 1927–28 India supplied only 30 per cent. of her own consumption, by 1932–33 she supplied 72 per cent. The output of cement increased by 42 per cent. between 1928 and 1934, India's share of the home market increasing from 71 per cent. to 95 per cent. The match industry now has a practical monopoly in the home market, and the output of refined sugar has increased sixfold in six years. Whereas India used to depend on imports of sugar for about one-third of her consumption, she is expected soon to become completely self-sufficient. Some of India's major industries (such as the Cotton and Jute Mill Industries, and the Steel Industry) are fully modernised, the equipment and efficiency of certain concerns comparing favourably with those of any country. There exist also numerous small workshops and domestic industries, some of which employ the most primitive methods of production. In the larger concerns hours and conditions of work are regulated by careful and detailed legislation based on the European model, but many smaller concerns remain completely unregulated and exhibit serious abuses, such as excessive hours, child labour, and lack of sanitation.

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[1] *V*. P. J. Thomas, *Population and Production in India*, and *Asiatic Review*, April, 1936, "The Indian Budget".

[2] *Asiatic Review*, April, 1936, "The Indian Budget."

[3] *Indian Budget*, 1934–35, page 39.

[4] *Indian Budget*, 1934–35.

The increase in output has not been accompanied by a proportionate increase in employment, and since 1929 the actual numbers employed in industrial concerns subject to the Factory Acts has slightly decreased. Yet real wages in large-scale industry appear to have been maintained at or above the pre-depression level, the cost of living having, on the whole, fallen more than money-wages.[1] Thus even since 1929 the standard of life of industrial workers has been maintained. This has, however, been largely at the expense of the cultivators, as industry has failed to absorb her share of labourers, the surplus being thrown back upon the land, whilst cultivators have suffered from a fall in the prices of what they sell more than proportionate to the fall in prices of what they buy.

The progress in industrial output can be attributed to the reconquest of the home market by Indian producers, behind a high tariff wall.[2] Most Indian industries (except the Jute Industry, which has been severely depressed) mainly serve the home market. Very few Indian industrial products can at present compete in foreign markets, or (with the exception of certain iron and steel products) are likely to be able to do so in the near future, and a large part of the home market would undoubtedly be lost without protection. The recent increase in sales has, therefore, been achieved at the cost of the bulk of the consumers, for the benefit of considerably less than 10 per cent.[3] of the population.

In normal times it is possible that the advantages of a "better balanced economy," of more diversified occupations, of provision for industrial training, and of the mitigation of the inferiority complex apparently engendered by the predominance of agriculture, may be considered to counter-balance the cost of protection, but during the recent depression—as will be shown later—the cost has been extremely heavy. Unless international prices and trade revive substantially, some revision of policy appears desirable, whether in the form of a reduction in tariffs or of some counter-balancing assistance to agriculture.[1]

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[1] The evidence for this statement is not complete, but where figures exist they support this view, even in the case of the depressed Bombay City Cotton Mill Industry.

[2] Discriminating protection was adopted in 1923, and has gradually been extended to all India's principal industries. The "revenue" tariff, also, affords substantial protection.

[3] This figure includes village and small-scale industrial producers, some of whom are not affected by protection.

The result of the depression, and of the tariff policy pursued, is that India is tending to become more self-sufficing. It has been estimated that she exports only some 8–10 per cent. of the value of her total production. Her share of world trade declined from 3.02 per cent. in 1929 to 2.64 per cent. in 1934.[2] India's dependence upon imports of staple manufactures (such as cotton and steel goods) has already been substantially reduced, but, unless self-sufficiency is to be promoted to an extent which will greatly impede general economic development and regardless of the effects on the standard of life, there is no reason to believe that India will progressively decline in importance as a market. She cannot at present herself produce the plant, machinery and specialised goods which will be required if she is to industrialise, and if her standard of life is to rise. But the type of goods imported is likely to continue to change. India is still very deficient in capital available for industrial enterprise,[3] in industrial leadership, and in technicians, which must tend to check the rate of industrialisation. Foreign enterprise may attempt to take advantage of the tariff by establishing concerns in India, but if the present feeling on such questions continues to prevail, measures will probably be taken to prevent or limit such efforts.[4]

It is interesting to speculate upon the probable trend of tariff policy under the new Constitution. In the past, although the principle of "tariff autonomy" has been in force since the Montford Reforms, the policy pursued has not satisfied articulate Indian opinion. "Tariff autonomy" in India's case has been interpreted to mean merely that the Home Government would not interfere with any decision agreed to by the Government of India and the Legislative Assembly, whilst the actual policy pursued has been one of "discriminating" protection and Imperial Preference. A considerable body of opinion favours more drastic protection and a resolution has recently been passed in the Legislative Assembly demanding that notice should be given to terminate the Ottawa Agreement. The policy to be pursued in the future will partly depend upon the alignment of parties under the new Constitution, but the feeling for industrialisation and against Imperial preference is so strong that even if parties are formed mainly along communal lines it may not prove difficult to achieve co-operation for this particular purpose, with the result that tariffs are likely to be raised and Imperial preference may be abandoned or limited to particular items included in bilateral treaties.

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[1] It will be shown presently that some, though insufficient, special assistance has been afforded to agriculturists. Protective tariffs have been imposed on sugar and wheat, but the other principal agricultural products cannot be thus assisted as India has an export surplus.

[2] During this period she was overtaken by Japan, Belgium, the Netherlands and Italy, falling from sixth to tenth amongst the trading nations of the world.

[3] The following quotation from Keynes' *General Theory of Employment* (p. 337), throws an interesting light on this problem : "The history of India at all times has provided an example of a country impoverished by a preference for liquidity amounting to so strong a passion that even an enormous and chronic influx of the precious metals has been insufficient to bring down the rate of interest to a level which was compatible with the growth of real wealth."

[4] It may be noted that for the first time Japanese is co-operating with Indian capital and leadership, in the case of a new steel works to be established near Calcutta.

Reference has already been made to certain results of the recent world depression, but the repercussions, especially on the peasants, must be more closely examined.

The very considerable progress achieved, as regards production, trade, financial position, and the standard of life of the masses, during the first three decades of this century received a severe check in 1929. The main features of the depression in India may be summarised as follows: (*a*) A great and rapid fall occurred in the prices of agricultural produce, those of India's staple exports falling, on the average, by more than 50 per cent. between 1929 and 1934, whereas the prices of manufactures (and of imports) fell much less rapidly. By 1934 the fall in wholesale prices had been checked, and the discrepancy between the price index numbers of exports and imports had been almost eliminated: (*b*) A great decline occurred in the value and volume of internal and overseas trade, which reached its nadir in 1932, since when there has been some revival, although the level of 1929, and the normal export surplus in merchandise have not been anything like regained. Railway traffic and earnings were seriously affected, and recovery in this sphere has been small, owing partly to the decline in long-distance traffic, partly to the increasing competition from motor traffic: (*c*) As far as can be judged by the available data, production has suffered much less than trade. There is no evidence of any general decrease in area under crops, or of total agricultural output,[1] whilst industrial output has on the whole increased. It has been estimated that agricultural output actually increased from an average of 100 for the years 1920–21 and 1921–22, to an average of 116 for the years 1930–31 and 1931–32; i.e. at a greater rate than population, which increased by 10.4 per cent. during the same period.[2]

The depression was, therefore, fundamentally a price depression, entailing in particular a great fall in the purchasing power of agriculturists. The value of the principal crops fell from Rs. 1,018 crores in 1929 to Rs. 534 crores in 1933. Hence the primary effects have been: (*a*) pressure upon and a lowering of the real income of those who have to make fixed, or relatively fixed, payments out of a reduced money income: (*b*) the substitution of self or Indian produced goods for goods formerly purchased or imported—a phenomenon which reduces choice and the advantages of internal and international division of labour: (*c*) a reduction in Governmental revenues, out of all proportion to the reduction in costs.

The financial policy pursued by the Government (which will presently be examined) was entirely successful from the budgetary point of view. So much so that during the last two years it has proved possible to make non-recurring grants out of the budget surplus to assist Provincial schemes for rural reconstruction, and to make additional grants for such purposes as Civil Aviation, and a scheme of district Broadcasting.[3]

Nevertheless financial stringency meant increased taxation, greatly reduced expenditure upon Public Works, and the starvation of what have been called the "Nation-building Services," e.g. agriculture, public health, small-scale and rural industries, all of which fall within the Provincial sphere.

The burden of the depression has fallen primarily upon the commercial classes, and—above all—the agriculturists. The small class of fixed income receivers (in so far as such incomes have been realisable)[1] and the industrialists—both entrepreneurs and wage-earners—have gained, although a certain number of persons have lost the opportunity for industrial employment.

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[1] Certain areas, for instance Bengal (which depends on jute) were severely affected, at least temporarily.

[2] *V.* P. J. Thomas, *Population and Production in India.*

[3] This offers a unique opportunity for reaching the rural population, and may eventually do more than anything else to solve the problem of rural education in the broadest sense.

Under these circumstances a great decline in the standard of life of the agriculturists might have been expected, especially as the financial and economic policy of the Government has in general been at their expense. Increased protective, revenue and excise duties have tended to raise the cost of what they buy, whereas next to nothing has been done to increase their incomes, or the prices of what they sell. Agriculture has not, of course, been entirely ignored. The Imperial Council of Agricultural Research was established in 1929, and has already more than justified its existence; a scheme for the improvement of marketing has recently been instituted; the work of the Agricultural Departments, Colleges, and Research Institutions has been extended; and Rural Reconstruction has been recognised as a primary objective. But all these are "long-term" schemes, which take time to mature. The point is that apart from quite minor remissions of land revenue and Government dues (necessitated by the insolvency of the peasantry), efforts to reduce the burden of indebtedness which have mostly not yet reached the stage of practical relief, and the special grants since 1934 to assist Rural Reconstruction, nothing specific has been done to relieve the peasants from the effects of the devastating decline in their purchasing power.

Statistical data whereby to judge changes in the standard of life in India are remarkable for their absence. Nevertheless such evidence as is available tends to show that the effects of the situation indicated on the standard of life of the masses have been less serious than might have been feared. The peasants have suffered and the pressure upon their resources has been severe, but their powers of adjustment have so far apparently enabled them to resist the worst consequences of the fall in their income, with the result that consumption per head of the necessities of life has suffered a surprisingly small diminution, production has been maintained, and the necessary adjustments (including greater self-sufficiency) have not prevented a continuation of the rate of increase of the population.[1] With regard to consumption, it has, for instance, been estimated that the total consumption of salt, kerosene oil, and cotton piece-goods was greater in 1932 (the nadir of the depression) than the average for 1920–1930, whilst in 1933 the consumption of cotton continued to increase, and that of salt and kerosene declined by only 4 per cent. and 8 per cent. respectively.

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[1] Rent receivers have, for instance, been obliged to forgo their receipts in many cases.

This remarkable resilience can be explained by the following considerations. In the first place India has been less hard hit than many agricultural countries on account of the diversification of her production. Secondly, the persistence of a considerable degree of self-sufficiency and lack of specialisation amongst the peasants means that they are only partially dependent for the bare necessities of life upon the market. Thirdly, the peasants have been assisted by the rise in value of their gold " hoards." Fourthly, their " fixed " payments have proved relatively less fixed than is the case in more economically advanced countries. The general pattern of the adjustment can be briefly described as follows. The peasants were faced with a great fall in the prices of their marketable crops, whereas there was no equivalent fall in the prices of what they normally purchase : domestic and farm requirements and hired labour.[2] In addition they had to make fixed payments such as rent, land revenue, water and other dues, and interest on loans.[3] The required adjustment was secured partly by a reduction in purchases, which meant greater self-sufficiency ; partly by the sale of gold ; partly by failure to pay rent, land revenue, interest on loans, and to make repayments of debt ; and partly by voluntary remissions or reductions of payments by creditors (e.g. of land revenue, rent and debt payments). Greater self-sufficiency has no doubt meant the substitution of inferior for superior food grains, for instance of home-spun and woven clothing for the superior mill-made or imported commodity, and of inferior " country " footwear for the urban product ; and has meant entirely forgoing the consumption of certain articles. Clothing and utensils can be made to last longer. The younger children can wear a minimum of clothing and no footwear. *Gur* can be and has been consumed instead of refined sugar.[1] But so far these reductions in real income, and in the standard of life, appear to have been possible without serious repercussions on health and efficiency. The burden of nominal debt has greatly increased, but actual debt payments have decreased. Landlords and creditors have in some cases seen that it was to their own interest to behave with moderation. In other cases foreclosures have occurred, with the result that some peasant-owners have become tenants of their creditors, and others have been obliged to give up their holdings and to depend on casual wage-labour. But the definite deterioration in the position and earnings of the latter does not yet appear to have affected sufficient numbers to make any considerable impression on the general standard of living. Meanwhile in almost every Province legislation has been set on foot with the object of effecting permanent reductions in indebtedness.

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[1] It has been argued above that any substantial decline in the standard of life must, under existing conditions, tend to check the rate of increase, through a rise in the death-rate.

[2] The latter is a minor item in India, as most peasants, with the help of their families, perform all the necessary labour. The wages of hired labour, where utilised, are largely fixed by custom, and do not vary quickly with prices.

[3] In some cases and areas these payments (e.g. rent) are still made in kind, which means that the receiver (e.g. the landlord) bears the burden of a fall in prices.

The conclusion is that up to the present the agriculturists have been, on the whole, able to maintain their foothold, though perilously. The question is how much longer they will be able to continue to do so, in the absence either of a substantial recovery in prices and trade, or of special Governmental measures of assistance. In any case it is clear that India's outstanding economic problem is the need for an improvement in resources, efficiency and standard of life of the cultivators.

III

Economic Preliminaries to Federation

It has already been stated that the economic conditions laid down as necessary preliminaries to the inauguration of the new Constitution have already been substantially fulfilled. The " conditions " were that a Reserve Bank should be established, with adequate reserves ; that the budgetary position should be assured ; that short-term debt should be brought within proper limits ; and that India's normal export surplus should be restored.

The establishment of the Reserve Bank promises, in course of time, to provide a solution for some of India's outstanding financial problems, and it is doubtful whether it would have occurred as early as 1935, had it not been realised that to defeat the proposal might postpone the inauguration of Federation.[1] The need for such a Bank was particularly great in India, where previously control of currency had been retained by the Government, whilst the Imperial Bank attempted, somewhat unsuccessfully, to control credit, and where facilities for the financing of internal trade—including the movement of crops—have been extremely deficient. At present there is no internal bill market in India, crops being moved on a cash basis, mainly by means of advances at high rates of interest to the cultivators, who in various ways are thereby prevented from obtaining the full market value for their produce. If co-ordination of the banking and credit systems can be achieved, and if something can be done to facilitate the financing of crops (for instance by the creation of negotiable trade bills), a great contribution will have been made towards the solution of one of India's pressing economic problems. An Agricultural Department of the Bank is being established, and an inquiry into the indigenous banking and money-lending system is to be undertaken before 1938. On the whole the establishment of the Bank appears to have given satisfaction, in spite of objections to certain clauses in the Reserve Bank Act and to the " safeguards " affecting the Bank in the Government of India Act. The latter state that no proposal for legislation affecting coinage, currency, or the constitution or functions of the Bank can be introduced without the previous sanction of the Governor-General, and give the latter (who also appoints and can remove the Governor and Deputy-Governors of the Bank) power to supersede the Bank in case of emergency, or should it fail to carry out the functions imposed upon it. The requisite reserve has already been accumulated.

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[1] Statistics show a reduction in the quality of cotton piece-goods consumed, and a decline in the consumption of refined sugar but not of *gur* (molasses or treacle).

After two years of heavy central deficits, during the depth of the depression, budgetary equilibrium was restored in 1933–34, since when an annual surplus has been secured, repayment of debt has continued, the emergency cuts in pay and part of the emergency taxation imposed in 1931 have been withdrawn, and the short-term debt has been reduced to a satisfactory level. The financial situation in the Provinces is less satisfactory, but has improved.

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[1] A Bill proposing to establish a Reserve Bank was defeated in 1927, opposition being due to fear that British financial interests would dominate a Shareholders' Bank, and that the present rupee ratio would be thereby perpetuated. The Government of India refused to consider the proposal for a State Bank.

India's credit stands to-day second only to that of Great Britain; the Bank rate is down to 3 per cent.—the debt is almost self-supporting, no less than 83 per cent. of the total debt in England and India being classed as "productive."

This situation has resulted from the consistent pursuance of "sound" orthodox finance, based on the principle, formulated by Sir George Schuster, that "we believe it is better to finance economic troubles when they come and that revenue and expenditure should be adjusted to meet the need, rather than that the need should be hidden and disguised." During the depression both capital and current expenditure were cut to the bone; economies were introduced in every sphere (including that of defence); taxation was increased; and no resort was made to borrowing for the sake of balancing the budget, extending public facilities and utilities, or assisting those hit by the depression.

India's normal export surplus has not yet been restored, but there has already been sufficient improvement in the balance of trade to permit the assumption that there will be no serious trouble on that score. The problem is that the export surplus necessitated by India's position as a debtor country was almost eliminated during the depth of the depression, and has not yet been regained in merchandise. Since England left the gold standard, however, the necessary balance of trade has been secured by exports of gold, which have amounted (since 1931) to no less than 32 million ounces, valued at Rs. 270 crores (£203 millions). This has been deplored as a sign that India is "living on capital," but actually only a small proportion of India's hoards have so far been depleted,[1] whilst the favourable price has been an important mitigation of the burden imposed by the depression on the peasants. The one liquid asset of the latter has risen in value. Provided that a substantial revival in world demand for India's exports is not too long delayed, the gold exports will, indeed, have saved the situation.

The Government of India can be congratulated on the speed and skill with which it has succeeded in fulfilling the financial conditions required, but it cannot be denied that the necessity has limited the choice of economic policy. Any attempt to provide employment and stimulate consumption (e.g. by a Public Works programme, financed by loans) would have been likely to frustrate or postpone budgetary equilibrium, and hence the inauguration of the new Constitution. There is no reason to suppose that the Government desired to depart from its traditional policy, but the constitutional position undoubtedly provided an additional reason for the somewhat ruthless policy pursued.

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[1] Since 1910 India has imported over 43 million ounces of gold.

IV

Economic Provisions of the New Constitution

The distribution of economic responsibility under the new Constitution depends partly upon the distribution of specific functions, but it also depends upon the distribution of general financial power. The problem in India has been how to transfer substantial responsibility and self-government whilst still retaining in British hands, at least for a time, that degree of control deemed necessary both to secure the assent of Parliament, and to prevent a shock to confidence in the credit of India.

The solution attempted by the Government of India Act is to transfer primary responsibility over a wide field to representatives of the Indian electorates; to "reserve" certain subjects, for which continuity of policy is essential for the maintenance of order and credit, or in order to fulfil obligations incurred by the Government of India in the past; and to introduce "safeguards" where responsibility has been transferred, which should only come into force in case of emergency, and which it is hoped may never have to be used.

The Act therefore proposed to establish a Central, All-India Federation, comprising British Indian Provinces, and such Indian States as accede, and to replace the present Dyarchy in the Provinces by Provincial Autonomy, with safeguards in both cases.

The proposal for a Federation of British India and the Indian States is obviously revolutionary. In the past the Indian States have recognised the sovereignty of the Crown, but have retained internal independence (the extent of which varies in different cases), and have been in no way subordinate to the Government of India. Federation will mean that those States which accede will enter for specific, limited objects only, and will retain their direct relations with the Crown, through the Viceroy.

From the economic point of view a considerable degree of unification has already been achieved throughout India as a whole. Currency, tariffs, and the railways are already controlled in a predominantly unitary manner, with certain exceptions.[1] Hence the chief change will be that in the future representatives of Indian States will take part in the formulation of policy in these matters,[2] and that where responsibility is transferred to representatives of the Indian electorates, that responsibility will be shared by Indian State representatives. The most fundamental problem is how this change will affect the formation of political groups and parties. Will it be possible to form parties capable of assuming leadership and responsibility from the members of a body representing not only different races, religions and communities, but also representing, to the extent of two-thirds, the democratic Provinces, and to the extent of one-third, the more or less autocratic Indian States?

The financial relations between the Indian States and British India have in the past depended upon treaties and agreements concluded at different times and on different principles between the States and the Crown, some States being on balance creditors, others debtors. The necessary adjustments will have to be made individually, but the new Constitution lays down the principle that, in order to encourage adhesion to the Federation, the "debtor" States shall have their net payments remitted, and the "creditor" States shall receive not less than formerly.

Under the new Constitution functions are divided into three classes: (1) Exclusively Federal functions; (2) Exclusively Provincial functions; and (3) Functions with regard to which concurrent powers are exercised by the Federation and the Provinces (e.g. criminal law, civil procedure, factories and trade unions).

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[1] The importance of these exceptions is diminished by the facts that most State railways are administered, under lease, by British railway authorities, and that the bulk of India's overseas trade passes through British Indian ports, whilst most States have abolished all Customs barriers.

[2] In the past it has been a grievance that prices have been raised in the States by tariffs imposed by the British Indian Legislature, but that the States have received no share in the revenue.

The exclusively Federal functions are themselves subdivided into " Reserved " and " Transferred." The former —e.g. defence, foreign affairs, ecclesiastical matters, and the tribal (backward) areas—are to be controlled by the Governor-General, assisted by advisers and officials appointed by and responsible to himself. The latter—e.g. the Public Debt, currency, posts, telegraphs and railways—will be controlled by ministers responsible to the new Federal Legislature. The exclusively Provincial functions—e.g. agriculture, land, education, public health and local government —are all to be controlled by responsible ministers. From this classification it emerges that no important economic subject has been " reserved," that economic matters affecting the country as a whole have been classed as transferred Federal subjects, and that what are considered as " nation-building " subjects—i.e. those most closely affecting the daily lives of the people, and which therefore demand an intimate knowledge of local conditions—have been allotted to the Provinces, whilst for factories and trade unions the object has been to combine local adjustments with a certain degree of uniformity.

The fundamental and interconnected questions to be considered are to what extent these provisions will result in transference of real responsibility in the economic sphere, and whether the Federal and Provincial Authorities will have sufficient general financial control and liberty to give them a free choice of economic policy.

The assurance that the revenue necessary for expenditure on the " reserved " subjects and on certain other essential, though transferred subjects (such as debt charges, pensions and salaries) should be available, has been given partly by providing that the relevant parts of the budget (expected to amount to some 80 per cent. of the total central expenditure) should be non-votable (though it may be discussed), partly by the safeguards. The latter give the Governor-General over-riding powers in emergencies (including any threat to financial stability)[1], and special powers to prevent specified actions which might react unfavourably on British interests in India.[2]

Critics complain that the removal of 80 per cent. of total central expenditure from the control of the Federal Legislature undermines the whole situation. Actually it seems probable that the votable 20 per cent. of the Budget will provide ample scope for the exercise of financial responsibility. In most countries the major portion of budgetary expenditure is necessarily, though not so obviously, withdrawn from Parliamentary control. If the situation is accepted, it will not differ essentially from that under other democratic Parliamentary Governments. But if dissatisfaction and distrust prevail, " irresponsible " behaviour may result, as it has in some cases under the Montford Constitution ; this may, in its turn, necessitate resource to safeguards.

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[1] Similar emergency powers are given to Provincial Governors.

[2] *V.* Chapters III, Part V of the Act, which prohibits discrimination against British subjects and companies.

The probable financial stringency and the difficulty of discovering new sources of revenue is likely to prove—sentiment apart—a more serious limitation on financial responsibility and control.

Detailed enquiries have been held, culminating in that by Sir Otto Niemeyer,[1] in order to determine how best to allocate resources without overlapping, and without overburdening the taxpayers, so as to secure sufficient revenue for the respective needs of the Federal Authority and the Provinces, and a revenue that shall expand in proportion to the probable increase in respective needs. The difficulty is enhanced by the extreme poverty and hence low taxable capacity of the masses. The new allocation of resources between the Centre and the Provinces does not differ fundamentally from that of the Montford Constitution. The Federal list includes customs, part of the income tax (except on agricultural incomes),[2] certain excise duties, corporation tax, the Salt duties, taxes on capital values (excluding land), succession duties, and terminal duties. The Provincial list includes land revenue, certain excises, taxes on agricultural incomes (if imposed), taxes on lands, buildings and on succession to land, taxes on professions and trades and on the sale and local movement of goods, luxury duties, and —when finances permit[3]—a share in the income tax. In addition it is provided that 50 per cent. or more of the receipts from the jute export duty shall be assigned (as has recently been done, on account of the depression in Bengal) to those Provinces where jute is grown. The exact allocation of resources was not in all cases determined by the Government of India Act, which left certain decisions until a later date. For this reason Sir Otto Niemeyer was appointed to make further enquiries and recommendations. In addition to his proposals (already noted) with regard to income tax and the jute export duty, he recommends recurring grants to the deficit Provinces of Rs. 450 lakhs per annum,[1] to be provided partly by cancellation of certain Provincial debts to the Government of India, partly by direct grants in aid.

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[1] *Indian Financial Enquiry Report*, April, 1936 ; Cmd 5163.

[2] At present no income-tax is levied on agricultural incomes.

[3] Sir Otto Niemeyer recommends that the revenue from income tax shall eventually be equally divided between the Centre and the Provinces, but that during the first five years the Centre shall retain the whole, unless it, together with receipts from railways, exceeds Rs. 13 crores, and that during the next five years transference of the Provincial share shall be gradually brought about. He also makes recommendations for the division of income tax between the Provinces. No arrangements have yet been made that the Indian States should come into the income tax system.

Under the Montford Constitution the criticism was that the centre had been allotted expanding resources, but had relatively staple expenses, whilst the Province had stable resources but expanding needs. It has been suggested that under the new Constitution, also, the Provinces will be starved, and prevented from undertaking constructive economic measures. But during the last few years there have been substantial changes in needs and yields, which must be taken into consideration.[2] In particular there are reasons to suppose that financial stringency will be at least as great at the centre as in the Provinces.

The chief changes affecting Central resources adversely are the reduced revenues from customs and the commercial departments. Before the depression, customs formed the largest single source of revenue, accounting for about one-third of the total Imperial and Provincial Revenue. Since then the depression and the higher level of duties have seriously reduced imports and the yields of the duties (especially from cotton goods and sugar).

Before 1929 revenue from commercial departments, in particular the railways, formed a substantial source of revenue. Since then railway earnings have failed to cover fixed interest charges, and any contribution therefrom in the near future to general revenues is most unlikely.

Revenue from income tax and excises is improving, but time must elapse before the deficiency under other heads can thus be counterbalanced. New excises (on sugar, steel, matches and lighters) have been imposed since 1934, with the idea of stimulating efficiency in protected industries, as well as of providing more revenue.

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[1] Not all of this is additional expenditure. For instance it includes Rs. 1 crores for the North-West Frontier Provinces, a sum which has been provided annually since 1932.

[2] Cf. P. J. Thomas: "The Indian Budget," *Asiatic Review*, April, 1936.

On the expenditure side the situation is affected by additional expenditure arising out of (*i*) the new machinery of Federal administration (estimated at Rs. 1.5 crores); (*ii*) the proposed arrangements with those Indian States which join the Federation (Rs. 1 crore); (*iii*) the necessity of granting financial assistance to certain Provinces (amounting to Rs. 2 crores in addition to sums already provided in the budget for 1936 which include some Rs. 1.5 crores on account of the establishment of two new Provinces); (*iv*) the separation of Burma (Rs. 2¾ crores); (*v*) the emergency expenses on account of the Bihar and Quetta earthquakes; and (*vi*) the necessity of increasing expenditure on defence at least up to the level agreed upon in 1929.[1]

In addition there is great need for increased expenditure upon subjects, such as agriculture and rural reconstruction which, whilst primarily Provincial, rely on Central assistance for research and co-ordination.

Opinion is unanimous as to the urgent need for increased Provincial resources. Moreover there is a growing opinion in India that " wise public expenditure is the royal road to increased economic welfare and to greater social harmony,"[2] I therefore conclude that the real obstacle in the future to the feeling and exercise of responsibility in economic matters will be financial stringency, whatever party or group may be in power. In particular the difficulty will be that the Legislatures will have considerable power to reduce revenue (for instance by more drastic protection, or by reducing the Salt Tax), but little power to reduce expenditure, and hence will have difficulty in finding the revenue necessary for increased expenditure in the desired directions.

V

CONCLUSIONS

On the whole it can be concluded that the new Constitution will result in the effective transfer of responsibility in the Provinces (except in emergencies); that the transfer at the Centre is formally much more restricted, but will offer scope for the exercise of responsibility if the new Constitution is accepted in India in a generous spirit; but that both in the Provinces and at the Centre the need for revenue remains a fundamental problem. If India is to be shaken out of her present economic rut, her equipment and efficiency must be increased both by broad social means —improved education, reforms in customs and institutions —and by more material measures, such as expenditure upon public works and utilities (mainly local and small-scale in type), and upon the land and its equipment, without which it is difficult to see how the standard of life can be substantially improved. Even if such investment cannot be expected to repay itself directly, it should result in a gradual increase in taxable capacity.

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[1] Expenditure was reduced below the agreed figure as an emergency economy. The sums mentioned above amount to some Rs. 8.7 crores or about £6½ millions. The Budget for 1936 estimated total expenditure at Rs. 85 crores.

[2] P. J. Thomas, " The Indian Budget," *Asiatic Review*, April, 1936.

What influence the new political situation will have on the attitude of Indian politicians—what likelihood there is of the new Constitution being accepted "in a generous spirit"—it is not my purpose to discuss. It can merely be pointed out that if the opposition is strong enough to make the Federation unworkable, or only workable under tremendous difficulties (such as frequent resort to sanctions), then there will be little hope of substantial economic improvement, whilst economic retrogression becomes a serious possibility. If, on the other hand, sufficient co-operation is secured to make the Federation work reasonably smoothly, then the main question will be what will be the probable alignment and programmes of the various parties which will emerge? Will they, as hitherto, be based mainly on communal divisions, or will parties emerge containing members of various communities, who agree to co-operate in order to promote definite social and economic ideals and policies?

The possible alternative groupings are legion. Attention has already been drawn to one of the most fundamental divisions; i.e. that between agricultural and urban, industrial interest. It is a good augury that the new Viceroy has already earned the nickname of "Peasant Viceroy," whilst it has been asserted that at no time has there been evident in India a more general appreciation of the pressing need to promote and press forward every useful scheme for rural betterment.

The Coordination of the General Theories of Money and Price[1]

By P. N. Rosenstein-Rodan

The distinction between "influences from the side of money" and "from the side of goods" and the consequent separation of the "monetary" and "non-monetary" approach in economic theory is an inheritance from the classical school which is being overcome only very gradually and with great difficulty. It is the purpose of this article to trace the process by which this separation is being abandoned, and to show how the coordination of the theory of prices and the theory of money into one logically coherent system is slowly being achieved in current economic literature.

I

The Notions of Barter Economy, Monetary Economy, and "Neutral Money."

1. The whole classical theory was a theory of relative prices of a barter economy in a state of equilibrium. For the classical economist analysing the nature and mechanism of value (partly also as an intrinsic "real" value) this value of goods and services must have appeared to be independent from the accidental price in money. Money was only the "veil"[2] to be removed because it concealed deeper and more fundamental relationships. The central and fundamental price theory was therefore isolated from the money theory. But the system of relative prices thus obtained could obviously not be directly applied to and

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[1] This article embodies the content of two lectures given in a course of History of Economic Thought in the University College, London, for the first time in January, 1934, repeated in an address to the Marshall Society in Cambridge in November, 1935. The argument is influenced mainly by the writings of Professors E. Lindahl and G. Myrdal. Several points have been also discussed in a Seminar in the University College, London. I am specially indebted to my colleague Mr. H. T. N. Gaitskell for many valuable observations made there.

[2] For quotations of passages in the classical literature showing in what different senses the idea of the veil of money was used, see Foster and Catchings: *Money*, Ch. I.

compared with the results of the real world. One equation—that determining the multiplicative factor which transforms relative into absolute prices—was still missing. The problem of monetary theory was to give this equation. The chapter thus added at the end was the quantity theory of money—an additional chapter not really made an integral part of the system. A quantity theory, however, expressed as a mere functional relationship between the means of payment and the general price level would not have been sufficient to determine the multiplicative factor required; in order to show that *ceteris paribus* the general price level was *determined* by the quantity of money a certain causal relationship had to be assumed. The quantity of money had to be explained by something else apart from the price level. This " something else " was the specifically monetary factor. The inherent difficulty in this attempt at a belated coordination, namely the impossibility of determining quantitatively the supply of money (the velocity of circulation being left undetermined), was not immediately realised. The results of equilibrium theory in a barter economy seemed thus not fundamentally changed in a monetary economy. The economic analysis referred therefore to a barter economy; the differences due to the monetary factor were added afterwards as a secondary correction. Even when later the inherent difficulty of determining the supply of money was realised, the traditional method was not revised. But a belated correction which only modified superficially the conclusions about the barter economy was bound to be insufficient at its best, for it was not based on an adequate conception of the differences between a barter and a monetary economy. An examination of the definitions of a " barter economy " and a " monetary economy " is therefore called for.

2. Definitions are not " right " or " wrong ". They are adequate or inadequate for various purposes. The definitions of barter- and monetary economy have been used for the purpose of comparing two economic processes differing from each other *only* by the existence or non-existence of money. Any differences in the results of two such otherwise equal economic states would be then due to money—they would reflect the purely monetary influences. A barter economy has thus to contain all the other elements existing in a monetary economy in order to form an adequate standard

of comparison; otherwise the comparison and its result, namely the distinction between "real" and "monetary" forces, would be meaningless. In fact, in the past this comparison has been made without due care for *ceteris paribus*. It was meaningless because the type of barter economy chosen for comparison was inadequate, and the type was inadequate because the analysis of the essence and nature of money was insufficient.

Ever since Aristotle and his followers in the Middle Ages, three functions of money have been distinguished: (i) unit of account (numéraire); (ii) medium of exchange; (iii) store of value.[1] Accordingly, three[2] different definitions of a barter economy[3] are possible: (i) Barter economy where there is only direct exchange between two goods (the narrowest meaning of barter economy), each good being the unit of account for one exchanging party[1]; (ii) barter economy with more than two goods and indirect exchange, different goods fulfilling for different individuals the first two monetary functions; (iii) barter economy with more than two goods and indirect exchange, different goods fulfilling for different individuals all the three monetary functions.[2] For comparison with the corresponding monetary economy only the first or second type of barter economy has been taken, and not the third which is the only adequate one.[3]

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[1] A good is a *unit of account* if it is the "common denominator of value", i.e. if prices are calculated in it. It has no influence on relative prices nor on quantities exchanged (or produced) at these prices.

A good is a *medium of exchange* if it intervenes in an indirect exchange. The two (or more) exchanges forming an indirect exchange must take place at known ("given") prices or at prices foreseen with perfect certainty. Otherwise it becomes a store of value. Under the assumption of given prices, the medium of exchange could not influence (*ex hypothesi*) the relative prices, it could only influence the quantities of goods demanded at given prices. If all prices were known however a medium of exchange would not be necessary, or it would only be necessary under particular and artificial assumptions. If for instance after a period of uncertainty perfect certainty obtained, then money which was previously a store of value might remain in existence because of frictions (see §10). Its value is then determined by "convention". Usually however all prices are not known where there are more than two goods. The exchange between more than two goods is therefore explained by a different method than that between two goods. The conditions of equilibrium are determined, but not the path by which this equilibrium may be reached. In the analysis of the genetic process by which equilibrium is reached, one has to recognise that whenever there are more than two goods there will be uncertainty about prices, and where uncertainty is present money will be not only a medium of exchange but also a store of value. The traditional definitions of a medium of exchange imply therefore frequently also a store of value function (*cf.* p. 270, note 3). The fundamental difference between an economy with two and that with more than two goods is therefore the best *fundamentum divisionis* between a barter and a monetary economy.

A good is a *store of value* where there is uncertainty about future events; it satisfies then the want for certainty (see §10). Not every good which is stored, but only a good which is stored specifically to meet unforeseen contingencies fulfils a store of value function. Goods stored for a definite purpose (i.e. to meet a situation foreseen with certainty), for instance corn for the winter, are not a "store of value" merely for that reason.

The fact that a good is used as a *Standard of deferred payments* is usually an important additional reason making it a suitable store of value. It does not however necessarily create a store of value. Perishable goods might be for instance a standard of deferred payments, in which case they could not be a store of value. On the history of discussions about the standard of deferred payments see C. M. Walsh: *The Fundamental Problem in Monetary Science*, New York, 1903.

[2] Assuming that the same good fulfils all the monetary functions where more than one monetary function is assumed. Thus the same good is e.g. the unit of account *and* the medium of exchange, although cases are possible (and have been discussed) where one good is the unit of account and another one the medium of exchange. But these cases do not involve special or new problems and may therefore be left out in this paper.

[3] By implication also three definitions of monetary economy, where money being the same good for all, fulfils the first, the first two, or all three monetary functions.

3. The conception of the "veil of money", for which another term "neutral money" has since been substituted, differs obviously according to the type of barter economy chosen for comparison with the (corresponding) monetary economy. When the *first* type of barter economy is taken, changes in the volume of money have no influence on relative prices nor on the quantities produced or exchanged. The results of the monetary economy are identical with the results of the barter economy. "Money" is here really only a "veil". When the second type of barter economy is taken, and according to the classical school constant costs are assumed, money has no influence on relative (long-run) prices, but the quantities produced or exchanged at these (constant) relative prices will be changed.[4] Money is neutral as far as relative prices are concerned, though not as far as quantities[5] are concerned. These two types

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[1] Given two goods *a* and *b* and two individuals I and II, I reckons his demand price for *b* in *a* $\left(p_{b_a}\right)$ and II his demand price for *a* in *b* $\left(p_{a_b}\right)$. $p_{b_a} \times p_{a_b}. = 1.$

[2] The "ideal type" is the case in which each good is "money" for a different group of people.

[3] This is yet another proof that although three functions of money were recognised, only the first two were really taken into account, the third one remained (and was bound to remain) neglected in the system of the classical school (*cf.* § 10). Therefore not only were the definitions of barter economy inadequate, but the definition of "monetary economy" was also unsatisfactory, because it simply left out one essentially "monetary" problem.

[4] See e.g. J. B. Say's *Traité d'Economie Politique*, 1st ed., 1803, and following ed., Vol. I, Book II, Chapter III, showing that the demand for a commodity increases when it acquires a monetary function in addition to its commodity function. The increased demand will lead to a higher value of money, leaving however (according to Say and the classical school) the other relative prices unchanged. A greater quantity of (metallic) money will be produced. Since the amount of productive resources is given, and constant costs are implied, the change in the quantity of metals means a change in the quantities of other goods. When the value of money is concerned Ricardo's usual emphasis of the (long-run) theory of normal value shifts to the (short-run) theory of market value. Otherwise because of constant costs not only relative but also absolute prices would have to be constant; only the quantities could change.

[5] The quantities of goods produced or exchanged are not included among the unknowns to be determined in the theory of the classical school. Having no demand analysis and working on the assumption of constant costs the classical theory only determines a system of (sometimes hypothetical) relative prices which would obtain if the quantities of the two goods were greater than 0. Thus the fact that "money" was here non-neutral in respect to quantities could not attract attention. J. B. Say, for whom value was the "measure of utility" (a statement which might have been a starting point for a demand analysis) consequently remarked this point (see footnote above), but not having actually developed a demand analysis he too did not attribute special importance to it.

of barter economy are the only ones which have been compared with the corresponding monetary economies. Since only the relative prices, not the quantities produced and exchanged, were an object of investigation by the classical school, two definitions of " neutral money " (" veil ") have been used, which were thought to be identical. According to one, money is neutral when changes in its volume have *no* influence on relative prices. According to the second one, money is neutral when changes in its volume have *the same* effect on relative prices as that which would obtain under analogous circumstances in a barter economy.[1] As long as the third monetary function and all it implies is assumed away, the two definitions are identical, the analogous circumstances are obvious but uninteresting. Eliminating the store of value function means assuming away the problem. When however the third monetary function is considered, it becomes far more difficult to analyse precisely what these analogous circumstances are. Yet it is on this vague idea of analogy that the familiar distinction between " real " and " monetary " forces is based.

4. We have therefore to compare the third type of barter economy with the corresponding monetary economy in order to see what " neutral money " there would mean. Let us assume the simplest type of such an economy : three individuals, I, II, and III, with three goods *a*, *b*, and *c*. In a barter economy *a* is " money " for I, *b* for II, and *c* for III. In a monetary economy *a* is money for all the three individuals. Money here is a good which fulfils all the three monetary functions.[2] The nature of the first two monetary functions was clear and has been adequately analysed in the classical theory. It is more difficult however to realise the meaning and all the implications of the third function of money.[3] The function of store of value and standard of deferred payments refers to intertemporal contracts, and this fact alone explodes the framework of the timeless static equilibrium theory of the classical school ; it could therefore not really be taken into account in this system. A closer investigation of this function was moreover impossible without the modern utility analysis.[3] It

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[1] The first definition (when interpreted in the sense that changes in money have *no* influence either in a barter or in a monetary economy) necessarily contains the second one. But the reverse does not obtain.

[2] In its third function however it will have more or less perfect substitutes (see § 7).

[3] For a fuller discussion of this point see § 10.

is only on the basis of this analysis that the connection of this function with the phenomenon of uncertainty, the fundamental constitutive rôle of this third monetary function, without which the very existence of money could not reasonably be assumed, and the nature of "money" as a good satisfying the want for certainty and having as such utility of its own, could be realised.[1] Although gradually some of these points were appreciated, all the implications were not seen at once and the customary distinction between "real" and "monetary" forces was not dropped. Yet the only way to throw light on this distinction is to compare this third type of barter economy with the corresponding monetary economy.

In this barter economy changes which correspond to changes in the volume of money in a monetary economy will in most circumstances have an influence on relative prices; money therefore will not be "neutral" in the first sense. The best way to show how improbable it is here that money will be "neutral" in the first (or second) sense is perhaps to state precisely the conditions under which this neutrality would obtain. If money, which as a store of value is a good satisfying the want for certainty, was for all the individuals an "independent good",[2] so that changes in the rate of substitution between "money" and the other goods would have no effect on the rates of substitution between these other goods, i.e. if the "elasticity of complementarity"[2] of money with the other goods was equal to zero, then changes in its quantity[3] would have no effect on the relative prices; money would here be neutral in the first (and therefore in the second) sense. It means in our example that in the indifference map of the individual I, *a* has to be independent of *b* and *c*: changes in the rate of substitution $\frac{a}{b}$ $\left(\text{and } \frac{a}{c}\right)$ have no effect on the rate of substitution $\frac{b}{c}$; in the indifference map of the individual II, *b* has to be independent of *a* and *c*; changes in the rate of substitution $\frac{b}{a}$ $\left(\text{and } \frac{b}{c}\right)$ have no effect on the rate of substitution $\frac{a}{c}$; and in the indifference map of the individual III, c has to be independent of a and b: changes in the rate of substitution $\frac{c}{a}$ $\left(\text{and } \frac{c}{b}\right)$ have no effect on the rate of substitution $\frac{a}{b}$. To state these conditions shows how improbable it is that they will ever be fulfilled. The modern utility theory shows that "independent goods" are the exception rather than the rule.[1] The fact that different goods have different degrees of saleability (Menger) makes them more or less suitable as a store of value (see § 7) and constitutes thus the main reason why it is most unlikely that a cash balance should be an "independent good" for one individual. Short of an extraordinary coincidence it is practically impossible that it should happen to be independent for all the individuals.

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[1] For a fuller discussion of this point see § 10.

[2] Using the terminology of Hicks and Allen: "A Reconsideration of the Theory of Value," ECONOMICA, Feb., May, 1934.

[3] "Monetary changes" have two meanings in our barter economy. (i) Change in the quantity of money, i.e. that the total quantity of *a*, *b*, and *c* changes (change of goods). (ii) Change in the value of money, i.e. that the individual demands for money (I for *a*, II for *b*, III for *c*) change when the total amounts of *a*, *b*, *c* remain constant (change of tastes). It is the first of these two cases which we are discussing here with the additional assumption that the increase in the amounts of goods means an equal increase in the individual's income.

5. Money may however be "neutral" even in the less improbable case when it is not an "independent good". We shall again consider two such cases. In the first one the total amounts of a, b, c change (change of given resources, constant tastes). In the second case total amounts of a, b, c are constant, only the preferences and therefore the individual relative demands for a, b, c change (constant resources, change of tastes).[2] (i) An increase in the volume of money means in our barter economy that individual I's holding of a, II's holding of b, and III's holding of c increase (because the total quantity of goods used as money has increased), their other holdings remaining equal. Under these circumstances I's rates of substitution $\frac{a}{b}$ and $\frac{a}{c}$ will presumably fall so that his rate of substitution between $\frac{b}{c}$ will also change. I's demand for b and c (in terms of a) will increase although the change[3] in his demand for b will

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[1] *Cf.* my "Complementarietà . . ." *Riforma Sociale*, 1933, and Hicks and Allen, *op. cit.*

[2] This corresponds to without being identical with the classical distinction between changes in the value of money originating on its side and changes in its value originating on the side of commodities. This distinction is as much a consequence of the theory of real value as the general distinction between real and monetary forces (*cf.* however p. 275, note 4). The classical theory of real value has been vigorously exposed in the brilliant book of S. Bailey: *A Critical Dissertation on the Nature, Measure, and Causes of Value . . .*, London, 1825 (London School reprint No. 7, 1931), and: *A Letter to a Political Economist*, London, 1826. But the distinction was so generally accepted that Bailey himself fell back into it in his otherwise very valuable book: *Money and its Vicissitudes in Value . . .*, London, 1837 (pp. 16–17). And unfortunately in this he had a series of most distinguished followers.

[3] If we took into account "odd" cases of complementarity, then this change may be positive or negative.

not be equal to the change[1] in his demand for *c*. Similarly II's demand for *a* and *c* (in terms of *b*) and III's demand for *a* and *b* (in terms of *c*) will increase. It seems then that if the preferences (indifference lines) of I, II, and III are similar and their incomes (purchasing power) equal, the market demand curves for *a*, *b* and *c* will remain unchanged, although all the individual demand curves for *a*, *b* and *c* are changed, because the changes in the individual demands mutually cancel out. Relative prices remain unchanged; money in this case would be neutral.[2]

(ii) If because of an increased feeling of uncertainty the individuals I, II, and III decide to increase their demands for their cash balances, e.g. by 10 per cent., then I's increased (individual) demand for his cash balance *a* means his increased (individual) offer of *b* and *c*.[3] Similarly II's increased demand for his cash balance *b* means his increased supply of *a* and *c*, and III's increased demand for *c* means his increased supply of *a* and *b*. Under particular assumptions about the shape of indifference lines and individual incomes, these changes in the individual demands may mutually cancel out, so that the market demands and prices remain unchanged. Money in such a case also is " neutral ".[4]

To state the assumptions under which money will be neutral both in a barter economy and a monetary economy means, in fact, to show how improbable it is that they should happen to obtain in reality. But this conclusion is not the only purpose of the two cases described above. They also imply some doubtful conceptions which must be analysed more closely. This discussion should finally help to clarify the distinction between the barter and monetary economy and the distinction between " real " and " monetary " forces, which is based on the former.

6. One of the conditions under which money (even when not an " independent good ") would be neutral was (§ 5) the assumption of " similar preferences or indiffer-

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[1] If we took into account " odd " cases of complementarity, then this change may be positive or negative.

[2] Money would be neutral in the first sense if the changes in individual demands added up to zero, which is possible (though unlikely) both in barter and monetary economy. It would be neutral in the second sense if the changes in individual demands determined the same relative prices in a barter economy as would obtain under similar circumstances (increase in the volume of money) in a monetary economy. This could obviously only happen by an extraordinary coincidence.

[3] The increase in his supply of *b* will presumably be greater or smaller than the increase in his supply of *c* (and similarly for the other individuals II and III); otherwise it would seem to be a case of money as an independent good discussed above.

[4] See footnote 1 above.

ence lines " of I, II, III. As long as the monetary economy is considered the meaning of this assumption seems to be clear. It becomes doubtful however when our barter economy is considered. The fact that in this case different goods are " moneys " for different individuals means, namely, when the store of value function is considered, that I's, II's, and III's judgments as to which good is the best store of value differ. A different good satisfying the individual's want for certainty means that their anticipations of future events are divergent. And since such expectations form an essential part of the individual system of preferences these systems *cannot* be equal.

Thereupon two interpretations of the assumption of " similar preferences or indifference lines " might be given. According to one rather wide interpretation, " similar preferences " mean that *apart from this difference of expectations* the preferences of the individuals are equal. But such a division of the individual system of preferences into those which determine the store of value and the " other " preferences is inadmissible. The system of preferences is in this sense indivisible. It is meaningless to " take out " of it an essential part, because the " other " preferences are necessarily a function of this essential part.[1] The assumption of " otherwise equal preferences " is therefore meaningless. Yet this meaningless assumption dividing the system of preferences into two parts is here only one form of the familiar distinction between " real " (=" otherwise equal ") and " monetary " influences.

Another interpretation may, however, be given which makes the assumption of equal indifference lines seem at first sight more plausible, although it does not ultimately save the comparison between the barter and monetary economy. The indifference lines of the individuals I, II, and III may happen to have equal shapes although their moneys are different if their tastes for the commodity use of money[2] are also different in such a way as to compensate the former differences. Assuming for instance that in our example *a* is gold, *b* silver, and *c* tin, I's rate of substitution between *a* as his " money " + *a* as a commodity and *b* may be equal to II's rate of substitution between *a* and *b* as his "money" + *b* as a commodity . . . and so on.[1] The equality of the indifference lines is here only the result of the fact that each commodity (in the sense of a technically identical good) is plotted on one coordinate in the system of indifference lines. If *a* (*b*, *c*) in its monetary use was plotted on one axis (x) and in its commodity use on another axis[2] (y), then the equality of indifference lines would necessarily disappear. Granting however the habitual way of plotting technically identical goods[3] we could have equal indifference maps of the individuals without having an equality of tastes properly speaking. On the basis of this improbable but conceivable case the comparison between the barter and monetary economy and the concept of neutral money in the (first or) second sense derived from it would seem to have some meaning though not much use. There is however still another difficulty besides the assumption of equal indifference maps and equal incomes which reduces still further the meaning and relevance of this comparison. It is this additional difficulty which we now have to examine.

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[1] *Cf.* the next § (7).

[2] We have to assume a metallic money in the monetary economy in order to be able to discuss the second interpretation of the meaning of equal indifference lines, otherwise the whole comparison between the barter- and monetary economy would be impossible for reasons given above when discussing the first interpretation of the meaning of " similar preferences ".

7. The assumption that the same good fulfils all the three monetary functions (p. 259, notes 1 and 2) requires a closer examination. It means that the same good which is the unit of account and the medium of exchange should also be the good satisfying the want for certainty, the store of value. But this does not imply by any means that it should be the only store of value. In fact different goods are always to some extent stores of value; most durable goods[4] especially those with many uses provide to some extent for unforeseen emergencies. Money is thus the only good fulfilling the first two monetary functions, but only one of many goods fulfilling what one may also call a cash-balance function.[5] A standard of deferred payments established

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[1] The same condition can be stated for the case when more than one good fulfils the store of value function (see § 7). Assuming three goods *a*, *b*, *c*, where *a* and *b* are also stores of value, I's rate of substitution between *a* as a store of value + *a* as commodity and *b* as store of value + *b* as commodity have to be equal to that of II, and so on.

[2] For general reasons which cannot be discussed here, such a way of plotting goods on the axes of the indifference lines systems is called for. *Cf.* my "Utilità Marginale" in ***Nuova Collana degli Economisti*** . . ., Vol. IV., Turin, 1936.

[3] *Cf.* p. 265, note 2.

[4] The possibility of reselling a good after some time is always a consideration which influences the utility of and the demand price for it.

[5] Store of value, encaisse désirée, Kassenbestand, cash balance, or Mr. Keynes' liquidity preference, are used here synonymously. They are mainly (see § 10.) goods providing for unforeseen contingencies, and therefore satisfying the want for certainty. About the want for certainty, *cf.* also my "The Rôle of Time in Economic Theory", 1, ECONOMICA, Feb., 1934.

by law or by custom will of course have the effect that a greater part of the store of value will be kept in the form of money than would be the case otherwise. But even so, money will not be the only store of value.[1]

A good satisfying the want for certainty is interdependent with other goods. It is because of this interdependence (" psychic complementarity ") that other goods are more or less perfect substitutes for money in its third function. Solely in the exceptional case where money is a good independent of all the other goods[2] would it be the only store of value. Usually therefore there is a bundle of different goods which form the store of value for each individual in the monetary economy as well as in the barter economy. For legal, institutional (standard of deferred payments) and other[3] reasons, money will play a larger part in the individual's bundle of store-of-value-goods in the monetary economy than in the barter economy. The dispersion of this bundle will therefore be smaller than in a barter economy. Since any judgment as to which good is the best[4] store of value implies an uncertain expectation[5] of future events, this smaller dispersion means that the individual's expectations of the future differ less in a monetary economy than in a barter economy. Barter economy and monetary economy are thus[6] not differences in kind, but differences in degree. Any economy in which the individuals' uncertain expectations of the future differ more than in another one is *in relation to that other one* a barter economy. " Pure " monetary economy and " pure " barter economy are therefore only ideal types, extreme cases which never obtain in reality, as much as (or even more than) " pure competition " and " pure monopoly ". In reality there are only economies in between these two extreme cases on the right and left end of a scale. Any change in the dispersion of the bundle of store-of-value goods shifts the economy more to the right or to the left of this scale.

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[1] Legal theories hitherto not based on knowledge of economic theory have frequently had an influence on definitions in this field. A systematic treatise of monetary law based on thorough-going economic studies is given now by Professor A. Lenhoff in Staub u. Pisko: *Kommentar zum Handelsgesetzbuch*, Vol. II, Austrian 3rd ed., Vienna, 1936, pp. 327, ff. It is illuminating for the economist as well as the student of law.

[2] I.e. if all the other goods are independent of money: assuming the goods a, b, c, d, e, etc. where a is money, the rates of substitution $\frac{b}{c}, \frac{b}{d}, \frac{b}{e}, \frac{c}{d}, \frac{c}{e}, \frac{d}{e}$ do not change when the quantity of a changes.

[3] If we consider e.g. a transition from a barter to a monetary economy then the fact that one and the same good becomes now the common unit of account (and medium of exchange) will induce most people to consider it as a better store of value than before.

[4] Inferior stores of value will be these goods in their store-of-value function which have an elasticity of substitution with the best store of value less than infinity.

[5] See § 10.

[6] The difference concerning the first monetary function (fulfilled by different goods for different individuals in a barter, by the same good in a monetary economy) implies no economic problem; that concerning the second monetary function no important economic problem. Thus only the difference concerning the third monetary function is relevant.

8. In view of the preceding discussion, it should be clear that with the exception of the practically impossible case of money as an independent good, money cannot be neutral in the first sense. It is almost equally impossible (§ 6) that it should be neutral in the second sense. These two definitions of neutrality which were thought to be identical are not however the only notions of the "veil of money" in the classical school. A third idea of neutral money which was also thought of as identical with the two first ones is implied in J. B. Say's famous theory of gluts. General overproduction is impossible; it is only the veil of money which conceals the fact that "products pay for products". The criticisms of Sismondi and especially Malthus[1] compelled Say to extend and to try to state more precisely his theory. It is interesting to compare the successive editions of his *Traité*, from the first edition, 1803, till the fifth, 1826. The chapter "des débouchés" grows from three and a half to twenty pages. The scope of the theory is very much restricted in the 5th edition, where Say confines the term "product" to a commodity which fetches an equilibrium price, adding that a commodity which fails to cover its cost of production does not merit the name of product.[2] [3] All this theory says is thus restricted to the truism: "if all goods produced fetched equilibrium prices (or one may add 'if all goods were produced with a correct foresight of their prices') general overproduction would be impossible." In other words:

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[1] *Cf.* Malthus: *Principles of Political Economy*, 1st ed., 1820. *Definitions in Political Economy*, 1827, and Say's "Letters to Malthus" in *Mélanges et correspondence d'économie politique*, Paris, 1833 (especially the 1st, 2nd, 3rd, 6th, and 7th). The first five letters have been published separately, *Lettres à M. Malthus*, in 1820; the sixth and seventh ones have been written in 1827.

[2] In the first edition of the *Traité*, 1803, "commodity" (marchandise) and "product" are used without any indication that these terms are not intended to be synonymous. It appears thus that the theory of gluts is only a form of the general proposition that "goods constitute the demand for other goods". Malthus interpreted therefore this chapter in the same way as presumably the majority of its readers. But Say replies in his first letter, 1820: "Permettez-moi de remarquer, . . . que je n'ai pas dit que les marchandises (commodities) s'échangeassent toujours contre des marchandises, mais bien que *les produits ne s'achètent qu'avec des produits*" (p. 175, *op. cit.*). When in his sixth letter to Malthus Say reported the changes in his 5th edition of the *Traité*, Malthus replied rightly that the whole problem is thereby entirely changed (*Mélanges* . . . p. 290), and Say had to admit: "Notre discussion sur les débouchés commence à n'être plus qu'une dispute de mots" (p. 309).

[3] The possibility of a price above the costs of production is not discussed in this connection. Obviously an equilibrium price is assumed.

"in equilibrium general overproduction is impossible." But the idea which Say conveyed, and obviously intended to convey, implied more than that. It was more or less as follows. In a (stationary) barter economy everybody obviously knows the (equilibrium) price. In successive states of equilibrium at successive moments of time, everybody would also know it. In a monetary economy money may conceal this knowledge. But money does not change the fundamental relationships obtaining in a barter economy. If it is only a "veil" then general overproduction is also impossible in a monetary economy.

Here however the idea of the "veil of money" is different from the former one. It means that if the monetary forces were also in equilibrium (through time) there would be no disequilibrium. The third conception of neutral money here implied is just a statement of conditions of a monetary equilibrium, which have been since characterised by absence of cumulative processes. Say may be thus shown to be a predecessor of Wicksell. The starting point of the analysis from a state of equilibrium obscures the portent of the theory[1] and the meaning of neutral money in the third sense. J. G. Koopmans[2] is mainly concerned with this third conception of neutral money, trying to formulate the (normative) principles of a banking policy which would preserve the "monetary equilibrium."

II

INCOMPATIBILITY OF MONEY AND STATIC EQUILIBRIUM

9. The separation of the theory of money from the general theory of prices (*cf.* § 1) has been gradually undermined by two streams of thought which for a long time, indeed until very recently, developed independently of each other: (i) The cash balance analysis (§ 10); (ii) the capital analysis (§ 11). Both lead by different ways to the

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[1] In a stationary state, relative prices are constant and money is neutral in the first and second senses. The neutrality of money in the third sense involves a further condition that the money market should also be in equilibrium (see however, p. 275, note 3). The coincidence of these two conceptions of a static equilibrium conveyed the idea that any one implies the other one and obscured thus the distinction of the different conceptions of neutral money. Taking a state of disequilibrium as the starting point of the analysis, it is easily recognised that while "monetary equilibrium" is the condition of a (static) equilibrium, i.e. that money must be neutral in the third sense if it is to be neutral in the first sense, static equilibrium is by no means a condition of the monetary equilibrium, i.e. money need not (in all practical cases cannot) be neutral in the first sense in order to be neutral in the third sense (see § 11).

[2] J. G. Koopmans: "Zum Problem des Neutralen Geldes" in *Beiträge zur Geldtheorie* (edited by F. A. von Hayek), Vienna, 1933.

same conclusion: that the existence of money is incompatible with static equilibrium.

10. It was no accident that the classical school neglected the store of value—i.e. the specifically monetary function of money. It would have been more difficult to realise its nature without a utility analysis. Once the modern theory of value was established it became more obvious that the utility of money in the traditional sense could not be coordinated with the utilities of other goods. While utilities of goods were *causes* determining relative prices, utility of money was the *result* of the pricing process; it played no part in its determination. The theory seemed thus to contain nothing relevant to the determination of the quantity of money.[1] If the theoretical system was to be complete, however, the demand for money had somehow to be explained. This led L. Walras[2] to distinguish between the utility of money as "numéraire" and money as store of value.[3] The "value of money" as numéraire was the result of the pricing process. But the utility of money as "encaisse désirée" was as much a cause determining the prices as the utilities of other goods. It became possible therefore to explain the demand for money as an integral part of the whole system of economic theory. The development of this approach coordinating the theory of money with the general theory of value by the Cambridge school (especially Lavington), Cannan, Hawtrey, and others, has been so brilliantly shown by A. W. Marget[4] that it is

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[1] Wicksell: *Geldzins und Güterpreise*, p. 35 (p. 39 in the English ed., 1936).

[2] *Cf.* A. Bilimovic: "Kritische und Positive Bermerkungen zur Geldwerttheorie," I and II, *Zeitschrift für Nationalökonomie*, 1930–31. A. W. Marget: "Leon Walras and the 'Cash-balance Approach' to the Problem of the Value of money," *Journal of Political Economy*, 1931, and "The Monetary Aspect of the Walrasian System," *Journal of Political Economy*, 1935.

[3] The terminology used by Walras is not uniform. In the *Eléments d'Economie Politique*, 1st edition, 1874, numéraire is introduced in the analysis of indirect exchange; it is therefore both unit of account and medium of exchange. In *Théorie de la Monnaie*, 1886, numéraire is defined as the common denominator of value, i.e. unit of account distinguished from money proper which is medium of exchange. In the latter editions of *Eléments* both terminologies are used. But the notion of medium of exchange as distinct from store of value is not quite exactly defined because Walras is not sufficiently aware of the particular kind of foresight and price-expectations assumed implicitly in the theory of equilibrium. If all the prices were known, a medium of exchange would influence the number of transactions, but (by assumption) not the relative prices. The increased number of transactions means an increase in demand both of goods and money. If a good is also a medium of exchange, then the relative demand for it increases which normally leads to an increase in price, proving thus that the knowledge (foresight) of prices was erroneous. This however creates uncertainty. And where there is uncertainty it is the store of value, not the medium of exchange function which is relevant. We see therefore in Walras' "encaisse monétaire" or "encaisse désirée" mainly a store of value, against Walras himself, who describes it as a medium of exchange.

The rôle of C. Menger's "saleability" of goods should be considered as analogous to that of Walras' "encaisse désirée."

[4] *Op. cit.*

sufficient only to refer to it here. Deeper insight leading to a necessary shift of emphasis has been shown in the work of Knight[1] and Myrdal[2], and has led to the best and most precise elaboration of this theory by Lindahl[3] and J. R. Hicks.[4]

In an economy without " frictions "[5] where everybody foresaw with perfect certainty his tastes, income, future prices and therefore the dates as well as the size of his purchases, nobody would keep a cash-balance. Everybody would invest all his money for exactly the periods of time allowed for by the foreseen future payments, since an omission to do so would involve loss of the interest which could be earned on it. Everybody would have an account in one central clearing bank and all payments would be effected by the appropriate entries in the books of the bank. Short run assets as well as long run ones would be equally good means of payment, since there would be no risk and therefore no difference between the short and long run rates of interest in this state of universal certain foresight. There would be no limit to the creation of credit by the central bank in this state; the economic process would develop as if the velocity of circulation of money tended towards infinity, i.e. money prices would become indeterminate, although relative prices would remain perfectly determined. This *reductio ad absurdum* shows that it is inconsistent to assume at the same time a state of general certain foresight[6] [7] and the existence of money: they are mutually incompatible. Money (as cash balance) exists only and in so far as general foresight is not certain,[1] it is a function of the individual's feeling of uncertainty,[2] [3] a means of meeting it: a good satisfying the want for certainty. Since certain foresight is assumed in static equilibrium money and static equilibrium are incompatible.

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[1] F. H. Knight: *Risk, Uncertainty and Profit*, 1921, p. 194 and Preface to the Reprint. London, 1934, p. xxii.

[2] G. Myrdal: *Prisbildningsproblemet och föränderligheten*, Uppsala, 1927, and " Der Gleichgewichtsbegriff als Instrument der geldtheoretischen Analyse ", in *Beiträge zur Geldtheorie*, Vienna, 1933.

[3] E. Lindahl: " Prisbildningsproblemets upplägning från kapitalteoretisk synpunkt," *Ekonomisk Tidskrift*, 1929; *Penningpolitikens mål*, Lund, 1929, and especially *Penningpolitikens medel*, Lund, 1930.

[4] J. R. Hicks: " Gleichgewicht und Konjunktur," *Zeitschrift für Nationalökonomie*, 1933. " A Suggestion for Simplifying the Theory of Money," ECONOMICA, Feb., 1935.

[5] See next paragraph.

[6] Certain foresight is implied under the assumption of perfect knowledge. The certainty would only exist for more than a moment if the foresight were correct. Foresight here obviously need not (and logically cannot, see next footnote) be perfect in the sense of including everything in the whole future (*cf.* O. Morgenstern: " Vollkommene Voraussicht und wirtschaftliches Gleichgewicht ", *Zeitschrift für Nationalökonomie*, 1935). It would have only to be perfect in the sense of including the relevant elements over the relevant (finite) future period: tastes, income and prices. Income and prices are the result of all the individual actions. If perfect foresight of future incomes and prices is assumed to imply the foresight of all individual actions it is not only most improbable but also logically inconceivable. Even if it is assumed to imply only the foresight of the results of all individual actions it still remains doubtful whether it is merely a most improbable, or more than that, an inconceivable assumption.

[7] The impossibility of perfect knowledge follows from the impossibility of verifying definitely any general scientific theory. See K. Popper: *Logik der Forschung*, Vienna, 1935.

In reality, besides uncertainty, "frictions"[4] of two kinds account for the existence of cash balances: (i) costs of investment (banking charges) of a small sum for a short period are mostly greater than the interest which can be earned on it. Small sums will therefore not be invested, but kept in the form of cash balances. (ii) Leisure lost by having to think and give orders about investing small sums may have higher utility than the interest which can be earned on them. It may therefore not be "worth the bother" to invest such sums; they also will be kept in the form of cash balances. These two kinds of frictions (increasing the "stability of the system") account for a certain finite quantity of money; its velocity of circulation would thus not be infinite even in a state of certain foresight. But the quantity of money due to these frictions would be both small and more or less constant since they do not change frequently. The characteristic and relevant "monetary" forces operate as a function of uncertainty.

The demand for money is thus determined by three causes (in order of their importance): (i) uncertain foresight; (ii) costs of investment; (iii) desire for leisure.

11. The second stream of thought originates from a deeper analysis of capital and interest. A good many "modern" ideas can be found in the works of forerunners like Bentham, H. Thornton, Malthus, Joplin, and others. They are all so brilliantly analysed in the masterly first

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[1] Absolutely certain foresight is assumed in this article for the "static" economy. A less rigid static scheme would correspond more to reality; in this scheme the actual ("real") data remain the same, although the economic subjects do not know for certain that they actually will remain the same. This constitutes an uncertainty and accounts for cash-balances.

[2] Uncertainty in its original meaning of doubt, of a vague and damp feeling of not knowing.

[3] The function of uncertainty about income and prices will be naturally a function of many variables.

[4] The term "friction" relates to a causal influence present only in an imperfect market. This is the case with those costs of investment which give rise to cash-balances, for they are indivisible and therefore form a significant percentage of small sums; in a perfect market they would be divisible and would not give rise to cash-balances. But leisure is not, strictly speaking, a "friction" in this sense, since the desire for leisure would exist even in a "perfect market."

chapter of Professor Hayek's *Prices and Production* that further reference is unnecessary. But these ideas were not systematically coordinated; real progress originates from K. Wicksell, his critics (Davidson, Cassel) and followers (Mises, Fanno, Hayek, Keynes, Lindahl, Myrdal, Ohlin).

Wicksell[1] started from the system of the classical theory. If a price increases we say that demand has increased or that supply has fallen and analyse the causes behind supply and demand. If all prices increase, we ought to say accordingly that demand or supply of all goods has changed. This would be a heresy to the classical school. Supply *is* demand for other goods, general over-production is impossible. Wicksell says that in the last resort the classical economists were right, but at first we can say nevertheless that supply and demand of all goods could change. " Every monetary theory must be able to say that under certain circumstances monetary demand for all goods is greater or smaller than the supply of all goods." Lindahl pointed out that under " all goods " Wicksell obviously meant only consumers' goods. Demand for consumers' goods is that part of national income which is not saved, i.e. quantity of consumers' goods times their price level. In a stationary state with no saving this means that total income buys the total (net) social product. This formula makes possible a transition to dynamic processes where there is saving. " Income " is here split up into (i) saving, (ii) demand for consumers' goods, and the social " product " is split up into (i) investment in real capital, (ii) production of consumers' goods. The determination of the equilibrium between these four elements constitutes the new statement of the problem.

The lever governing this equilibrium (or disequilibrium) is the money rate of interest. It is analysed in three fields: (i) Productivity of round-about ways of production; (ii) capital market; (iii) market for consumers' goods. The equilibrium rate of interest should in (i) be equal to the physical[1] marginal productivity of real capital (natural rate of interest), in (ii) equalise supply and demand of savings, in (iii) stabilise the price level of consumers' goods. Wicksell's thesis that the three conditions of equilibrium are identical has not been proved. Only (i) and (ii) are identical (on appropriate definitions of the " natural rate of interest " and " savings ") and are in conflict with (iii), which has been abandoned accordingly by all the Neo-Wicksellians.

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[1] K. Wicksell: *Geldzins und Güterpreise*, Jena, 1898. English edition: *Interest and Prices*, with an introduction by Professor B. Ohlin, London, 1936. *Lectures on Political Economy*, Vol. II (Swedish 1st ed., 1906; 2nd ed., 1915; German edition, Jena, 1922), English edition, London, 1935, and numerous articles quoted in Professor Ohlin's Introduction to *Interest and Prices*.

Wicksell's ideas improved and further elaborated by Lindahl and Myrdal are summarised here (following mainly Myrdal's exposition in *Gleichgewichtsbegriff* . . . , 1933, § 13-26) in a sketchy way only so far as is necessary in order to see that his theory confirms the conclusion that the very existence of monetary mechanism implies dynamic conditions.

The condition of equilibrium is the equality of the natural and the money rate of interest. If the money rate is not equal to the natural rate of interest a " cumulative process " will result, lasting as long as the two rates remain unequal, and coming to an end only when they become equal.[2] If for instance the natural rate has risen, the money rate remaining constant, then the capital values (future prices of products discounted at the money rate of interest) increase ; productive resources are shifted from the consumers' goods industries into capital goods industries, the production of consumers' goods falls, the price of consumers' goods rises.[3] The rise of consumers' goods prices does not however stop the process, because capital values rise again accordingly (entrepreneurs capitalise the now risen prices of consumers' goods at the money rate of interest), and the cumulative process[1] goes on until the discrepancy between the money and natural rate of interest disappears. The same takes place *mutatis mutandis* when the money rate is higher than the natural rate of interest.

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[1] Wicksell's natural rate of interest is defined under the assumption of one factor and one product. It becomes difficult to give it a precise meaning when there are many products, as Wicksell himself has realised. Lindahl (1930) and Myrdal (1933) have therefore rightly pointed out that natural rate of interest must not be interpreted as a physical but as a value productivity. " The money rates of interest are included as elements in the construction by which the natural rate is determined." " It is impossible to conceive of relative barter terms whose development is independent of the absolute monetary units in which credit contracts are concluded " (Myrdal, *op. cit.*, pp. 393–4). Seen in the light of that interpretation the natural rate of interest is therefore similar to what Mr. Keynes now calls the " marginal efficiency of capital ".

[2] Wicksell assumed at first that the natural rate would remain constant and the money rate of interest would be adjusted. After the criticisms of Davidson and Cassel he admitted later (and still later went back on this admission again) that the natural rate also may change. *Cf.* B. Thomas : " The Monetary Doctrines of Professor Davidson, *Economic Journal*, 1935, and Professor B. Ohlin : Introduction to *Interest and Prices*, London, 1936.

[3] In a state of full employment, productive resources can be only shifted at higher remunerations. With a certain type of anticipations (see next page), the prices of consumers' goods rise because of the diminished output *and* because of the increased demand on the part of the owners of resources whose remunerations have increased. In a state of unemployment resources are not shifted, but unemployed resources are absorbed into the capital goods industries. The output of consumers' goods does not diminish, but the demand for them increases because the formerly unemployed will increase their demand. The prices of consumers' goods rise therefore, although not by so much as in the case of full employment, and the " cumulative process " will go on until the two rates of interest become equal. Unemployment makes therefore a difference of only degree (the process is cumulative at a lower rate) but not of kind. If resources in the consumers' goods and capital goods industries were however so specialised as to constitute non-competing groups, then no inequality of interest rates would give rise to a cumulative process (Lindahl).

The equality of natural and money rates of interest is thus the condition of a "monetary equilibrium". But the term equilibrium has not the same significance here as in static price theory. There any disturbance sets forces in operation which tend to restore the system to its original position. At any time there is a tendency (a virtual movement) towards one definite point, in analogy to the surface of water or to a pendulum. Here a disturbance (inequality of interest rates) sets a movement in motion (cumulative process) which would go on indefinitely; there is no definite point towards which the system tends.[2] The "monetary equilibrium"[3] [4] characterised by absence of such cumulative processes is therefore a dynamic equilibrium. Wicksell could only deal with monetary phenomena in a dynamic theory. This confirms in yet another way the conclusion of the cash-balance approach (§ 10) that money and static equilibrium are incompatible.

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[1] Any lasting process is cumulative. It is cumulative if the prices increase at the same rate. Wicksell refers sometimes also to a particular cumulative process when prices rise (permanently) at an increased rate, when because of risen prices entrepreneurs anticipate a further rise of prices.

[2] ". . . The movement and equilibrium of actual money prices represents a fundamentally different phenomenon . . . from those of *relative* prices. The latter might perhaps be compared with a mechanical system which satisfies the condition of *stable* equilibrium, for instance a pendulum. Every movement away from the position of equilibrium sets forces into operation . . . which tend to restore the system to its original position, and actually succeed in doing so, though some oscillations may intervene.

The analogous picture for *money* prices should rather be some easily movable object such as a cylinder, which rests on a horizontal plane in so-called *neutral* equilibrium. The plane is somewhat rough and a certain force is required to set the price-cylinder in motion and to keep it in motion. But so long as this force—the raising or lowering of the rate of interest—remains in operation, the cylinder continues to move in the same direction. Indeed it will, after a time, start "rolling"; the motion is an accelerated one up to a certain point, and it continues for a time even when the force has ceased to operate. Once the cylinder has come to rest, there is no tendency for it to be restored to its original position. It simply remains where it is so long as no opposite forces come into operation to push it back" (Wicksell: *Interest and Money*, pp. 100/101).

[3] We use the term monetary equilibrium here only in the sense of equilibrium in a monetary economy, which is necessarily a dynamic equilibrium (*cf.* p. 280, note 3). We do not refer however to a situation in which there is a state of "monetary equilibrium" and of "(relative) price disequilibrium". Such a distinction is a remnant of the distinction between "real" and "monetary" forces, and is meaningless (*cf.* next footnote).

On the notion of "monetary equilibrium", *cf.* Lindahl, *op cit.* 1930; criticisms of it by Myrdal: "Om penningteoretisk jämvikt," *Ekonomisk Tidskrift*, 1931, and *op. cit.* 1933. Lindahl's scepticism about the notion of monetary equilibrium is shared by B. Ohlin: *Penningpolitik offentliga arbeten och tullar som medel mot arbetslöshet*, Stockholm, 1934.

[4] The distinction between influences from the side of money and from the side of goods without any reference to a barter economy may be used as a basis for action of economic policy ("intervention"). Aiming at certain ends of economic policy by altering (by intervention) some data one may consider which elements should best be changed in order to achieve these ends. The question whether a change of monetary policy or a direct change in the conditions of production of goods would be opportune may be then called for. The distinction between influences from the side of money and from the side of goods has then a meaning; it locates the source of the initial change of data. But a question whether "the introduction of money causes disturbances" involves a comparison with a state in which there is no money, and is meaningless. There is "money" in any dynamic economy and the behaviour of money (demand and supply of money, liquidity preference), i.e. the type of monetary (banking) policy is always a datum (independent variable) of the pricing system. The Austrian distinction between the "external" and the "internal value of money" (Menger, Wieser, Mises) is therefore even in the light of a most favourable interpretation a misleading terminology.

The dynamic character of the monetary equilibrium would have become more obvious if Wicksell did not take a stationary state as a starting point of his analysis. In such a state all the three Wicksellian conditions of monetary equilibrium are fulfilled *ex hypothesi*. There is also *ex hypothesi* an equilibrium between other elements which if maintained would prevent the realising of a monetary equilibrium after a disturbance. Wicksell analyses a process in time. The main task of his theory is to enable us to state whether there is monetary equilibrium or disequilibrium (expansion or contraction) at any moment of the dynamic process. The best method is therefore to take a state of disequilibrium as a starting point of the analysis. Then one would realise more clearly the particular importance of anticipations and uncertainty. In a stationary state prices are constant, everybody anticipates therefore rightly that the prices ruling at present will also rule in the future. Wicksell implicitly assumed this type of anticipations[1] in his analysis of cumulative processes. If there is a discrepancy between the natural and money rates of interest and if everybody anticipates that the prices ruling at present will also rule in the future, then the cumulative process will originate as deduced by Wicksell. But in a position of disequilibrium a different kind of anticipations may exist which might prevent any cumulative process or even reverse its direction. In a dynamic process anticipations of prices and uncertainty are as much independent variables determining demands and supplies as actual prices.

Since a barter economy is not different in kind from a monetary economy (§ 7) cumulative processes will also exist in a barter economy.

12. A failure to include the anticipations of future prices and the factor of uncertainty is, according to Myrdal (1933), the cause of the same deficiency in the theories of both Mr. Keynes (*Treatise on Money*) and Professor Hayek: they are both *de facto* too static and therefore unable to

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[1] Occasionally another type of anticipations of rising prices is mentioned, but the fundamental importance of anticipations is not fully realised, although attention is directed to it. It is unnecessarily obscured by starting from a stationary state.

solve dynamic problems. Mr. Keynes did not reply[1] to Myrdal's criticism. But Professor Hayek replied in what undoubtedly is the best reformulation of his theory.[2]

He states that anticipations and the risk factor obviously play a most important part in the entrepreneur's economic plan. But we have to distinguish between anticipations which are " founded in the facts " and those which are not. Actual prices give the best information on the economic situation (unless an inappropriate monetary policy modifies them); anticipations based on them are founded in the facts and may therefore prove to be correct ; other anticipations will prove to be erroneous and will therefore be corrected by the course of future events.[3] It does not seem that this argument proves its case. Expectations that actual prices will also rule in the future would possibly be better " founded in the facts " if actual prices were equilibrium prices. And while it is undoubtedly true that changes in actual prices are one important element influencing the anticipations, they are by no means the only or the decisive element. As long as no unique correlation between changes in actual prices and anticipations can be shown—and it is most improbable that it ever will be shown—anticipations of future prices must be considered as independent variables determining the demand in the same way as actual (" real ") prices.

Another argument has been advanced that anticipations need not be considered as independent variables apart from actual prices. It is true that each single entrepreneur's decisions are determined by his anticipations and actual prices. But under free competition with many entrepreneurs it is reasonable to assume a random distribution of anticipations. There will be therefore as many pessimists as optimists and different anticipations will cancel out their effects to zero. While the entrepreneurs' individual demand curves will be changed by their anticipations, the aggregate demand curve will be only a function of actual prices. This seems at first to be the best case made so far against the view that price expectations play the same rôle in determining conduct as "real" prices. But even this best case is not good enough for two reasons. *Firstly* it is not reasonable to assume a random distribution of expectations at any moment of time. Such a distribution obtains, if at all, only in exceptional circumstances. Normally it seems that anticipations are "contagious" and "waves of pessimism and optimism" are original causes which no trade cycle theory could fully explain as derived from real prices. *Secondly*, even under the assumption of a random distribution of expectations, divergent anticipations need not necessarily cancel out their effects to zero. Let us assume, for instance, one hundred entrepreneurs having the same capital, and firms equal in every respect producing the same product. The present price of the product is 100, but fifty optimistic entrepreneurs anticipate a rise to 110, and fifty pessimistic entrepreneurs anticipate a fall to 90. These symmetrically divergent anticipations will not cancel out their effects to zero because of the fundamental asymmetry of supply. The increase in costs involved in an expansion of the optimists' firms will usually not be equal to the fall in costs due to the contraction of the pessimists' firms.[1] Anticipations even when distributed at random will normally not mutually cancel out, but will influence the price conditions.[2]

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[1] Meanwhile he met this criticism *de facto* by revoking his *Treatise on Money* and publishing his *General Theory of Employment, Interest and Money*, London, 1936, which not only includes anticipations but sometimes seems to go to the opposite extreme to Hayek's theory. While Hayek argues as if only " real " (actual) prices determined the demand, Mr. Keynes seems sometimes to imply that only anticipations, not actual prices, determine it. The demand is however a function of actual prices as well as of anticipations.

[2] F. A. von Hayek : " Preiserwartungen, Monetäre Schwankungen und Fehlinvestitionen," *National Økonomisk Tidskrift*, 1935 (translated in French : " Prévisions de prix, Perturbations Monétaires et Faux Investissements", *Revue des Sciences Economiques*, 1935.

[3] It can obviously be only realised, *ex post*, whether an anticipation was " founded in the facts ".

III

THE SYNTHESIS OF THE THEORIES OF MONEY AND PRICE

13. The cash-balance analysis as well as the Wicksellian capital analysis both yielded the same conclusion: that

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[1] The proportion between the costs of expansion and contraction will vary moreover in various phases of the trade cycle.

[2] If the optimistic entrepreneurs instead of increasing their output buy forward a part of the output from the pessimistic entrepreneurs then a situation may be constructed in which the divergent anticipations mutually cancel out. But even when not taking into account considerations of prestige and goodwill which will often prevent buying forward instead of expanding, we have to remember that only optimism for a short run will lead to forward contracts, while optimism for a long run would induce the optimistic entrepreneurs to expand rather than to buy forward. And even in the case of short run forward contracts the capital set free for the pessimistic entrepreneurs who sold forward a part of their output need not be equal to the increase in capital on the part of the optimistic entrepreneurs. The capital set free for the pessimistic entrepreneurs need not moreover be used for paying back bankers' debts, which would offset the credits granted to the optimistic entrepreneurs, but may be invested elsewhere. So even under much more favourable assumptions, divergent anticipations cancel out only in exceptional circumstances.

the assumption of money and static equilibrium at the same time are incompatible. We can deal with money only in a dynamic economy. To coordinate the general theories of money and price means to develop both theories under the same assumptions. A coordinated system of static theories of money and price is impossible since a static theory of money is impossible. The only possibility is therefore a coordination of a dynamic theory of price with a dynamic theory of money. Wicksell did not quite achieve this task because he linked up his dynamic theory of money with a static price theory.[1] If the task is to be achieved we have to link up the theory of money with a dynamic theory of price. How are we to arrive, however, at a dynamic theory of price, which we need in order to make the theory of money an integral part of the theoretical system ?

Here the results of both approaches to a dynamic theory of money (§ 10 and 11) are fruitful. The important factor to be included are uncertainty and anticipations. Anticipations of future prices form besides actual prices independent variables determining present demand. Assuming three goods a, b, c. $\mathrm{D}a = \mathrm{f}\,(\mathrm{p}a, \mathrm{p}'a, \mathrm{p}''a \,.\,.\,.\,.\,.\, \mathrm{p}b, \mathrm{p}'b, \mathrm{p}''b \ldots \mathrm{p}c, \mathrm{p}'c, \mathrm{p}''c \,.\,.\,.\,.)$ where $\mathrm{D}a$ is demand for a, p_a, p_b, p_c are prices of a, b, c, p' is the price expectation for the next interval of time, p'' is the price expectation for the second interval of time (p''' for the third interval of time, and so on).[2] We have thus as in the theory of static equilibrium with n goods $n-1$ unknowns determined by $n-1$ equations. This takes account of anticipations as if these anticipations were certain. Uncertainty is taken into account under the form of demand for cash-balances. The cash-balance approach (§ 10) shows that where uncertainty obtains, the cash-balance is in every respect an economic good ; it forms therefore the $n+1^{th}$ good and the n^{th} unknown. The demand for this $n+1^{th}$ good is a function of uncertainty about future events. From the second approach (§ 11) we know that the equilibrium rate of interest has to be determined in order to determine the dynamic equilibrium. The rate of interest is a price on the market of money. One part of money is already included in the system of independent variables as cash-balance. A second part however is formed by money on the market for loans and debts appropriately defined.[1] This second part constitutes the $n+2^{nd}$ good and the $n + 1^{th}$ unknown to be determined.[2] Whereas we had $n-1$ unknowns in the theory of static equilibrium we have $n + 1$ unknowns in a theory of dynamic " equilibrium ". Such a theory of dynamic " equilibrium "[3] achieves the coordination of the general theories of money and price into one logically coherent theoretical system.

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[1] His price theory is " static " because it implies, as we have seen (§ 11) only one kind of anticipations : that actual prices will also rule in the future.

[2] $\mathrm{D}a$ is a function of several variables and not a sum of several functions of one variable because price expectations are certainly also functions of actual prices.

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[1] An appropriate definition of loans and debts is very difficult to give. We may at first get round that difficulty by selecting the loan equation as the one to be eliminated from the system of equations determining the equilibrium. In the static theory with n goods it is indifferent which from n equations is eliminated. When having $n+2$ goods in a "dynamic equilibrium " we may take n equations (stating the equality of supply and demand) for n goods, instead of the usual $n - 1$ in the static theory, and eliminate instead the equation stating the equality of supply and demand for loans, because that one will now result from the rest. This is for instance the method adopted now (1936) by Mr. Keynes (*cf.* J. R. Hicks: Mr. Keynes' " Theory of Employment," *Economic Journal*, 1936, p. 246).

The difficulty would be avoided altogether if loans were a homogeneous " good " and if there was therefore one interest rate. Loans for different terms are however presumably different goods; there is a family of different interest rates, not one interest rate. It is therefore only a provisional and unsatisfactory simplification if we treat loans as one good. The task of defining loans in an appropriate way remains to be performed.

[2] This seems to be in Dr. Hicks' mind in " Gleichgewicht und Konjunktur ", *Zeitschrift für Nationalökonomie*, 1933, pp. 444/445.

[3] " Dynamic equilibrium " is used in current economic literature in two senses. Generally it stands simply for any " situation at a moment of time "—there is then no correlative dynamic disequilibrium. If we define equilibrium in a more appropriate way, as a state which would maintain itself indefinitely if nothing new happened, then it is clear that a dynamic equilibrium could only obtain if all the anticipations were correct. They can be correct however only for a very short run; for a longer period of time a part of them is bound to prove erroneous (*cf.* p. 271, note 6). As time passes by, anticipations which proved to have been erroneous are modified, we have therefore always new data determining the new situation: an " equilibrium through time " (*cf.* my " Rôle of Time, . . . " ECONOMICA, 1934, p. 84) cannot exist over more than a very short time. In this sense there is therefore only a disequilibrium without a correlative dynamic equilibrium.

A part of the changes in anticipations which proved to have been erroneous may for some short time be conceived of as " induced " (corresponding to " endogenous ") changes of data; it gives then rise to Wicksellian cumulative processes. Since it is only a part of erroneous anticipations and not all anticipations, which for some time may thus be conceived of as dependent variables, cumulative processes can only be explained on probability grounds.

Nassau Senior's Contribution to the Methodology of Economics

By Marian Bowley

The intensity and persistence of the methodological controversies on the Continent have distracted attention from the mode of growth of the English approach to the problems of the method and scope of economic enquiry.[1] Indeed it has frequently been assumed that continued use of the deductive method has been the result of blind adherence to the classical tradition without any important discussions, except such as were stimulated by the attacks of the historical and empirical schools. But in this respect the historians have shown a lamentable disregard of their own avowed principles of research, and failed to appreciate the history of the methodology they have attacked. By attempting to explain away the existence of the classical school of method in terms of contemporary philosophy and institutions, they have overlooked the actual development of the methods they have criticised. In fact, whatever may have been their mistakes, the adherents of the classical method have possessed a far greater understanding of its problems, than their critics have either given them credit for, or displayed themselves.

The classical economists themselves have shown a very real interest in putting their own house in order, a fact which perhaps accounts for their apparent indifference to the developments of divergent schools of method, of which they were not by any means unaware.[2] It thus appears to be more useful to examine the way they dealt with their own problems than to follow the historians over the well-worn field of the relation of classical economics to Benthamism.[1] Everything possible, right or wrong, must have been said by now in interpretation of the philosophical background of English Nineteenth Century economics—the result of it all is merely to leave a profound scepticism as to the value of such explanations if, instead of reading commentaries on the Classics, one reads the Classics themselves. Perhaps a more fundamental reason for taking this course is the failure of the attempts to explain away the significance of the classical methodology, to account either for the continuity in treatment between Ricardo and Marshall, or for the growth of deductive schools in Austria and Lausanne. I shall, therefore, ignore the explanations, plausible and otherwise, that have been given of the general adherence of English economists to the deductive method in economics, and limit myself to following out the attempts that were made to define that method.

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[1] The criticisms of the various branches of the Historical School do not directly concern us here, but it is of some interest to notice that it attracted its most distinguished English adherents, J. K. Ingram and Cliffe Leslie, at a time when it was most under the influence of Roscher and Knies, both of whom admitted the importance of the results of the classical analysis. For the most extreme criticisms of the deductive method see Schmoller: *Grundfragen der Socialpolitik und der Volkswirtschaftslehre*; for a reply see Menger: *Untersuchungen über die Methode der Socialwissenschaften und der Politischen Oekonomie.* Cf. also Robbins: *The Nature and Significance of Economic Science* (2nd ed.), for a more recent defence.

[2] Marshall (*Principles of Economics*) appears to have underrated English development of method by an over-generous attempt to give credit to the work of the German Historical School. In Appendix C, with a remarkable disregard of Senior's and Cairnes' attempts to distinguish between the science and the art of economics, he says, "It is only recently and to a great extent through the wholesome criticisms of the historical school that prominence has been given to that distinction between strategy and tactics in warfare, in the field of economic method." Actually Senior used practically the same analogy.

In fact the controversies within the deductive school have no logical connection with what may roughly be called the historical approach.[2] All the protagonists have started from the basis that there are permanent uniformities in economic behaviour. The disputes have been concerned with the question of how far it is possible to select the data of economic analysis in order to examine certain aspects more closely, without omitting anything organically connected with the fundamental problems—or put more technically, how few, and how simple, are the terms of the economic functions which are sufficient to determine the relations between all the relevant variables ? Essentially it is this question which has occupied the centre of interest from the beginning of last century to the present day. With the exception of John Stuart Mill, who attempted to introduce the economic man as a hypothetical basis of economic analysis,[1] and a few of his followers, English economists have always started from the idea that the initial premises must include the whole range of data relevant to the pricing process ; the principal problem has been to decide what the data are. Thus the methodological significance of the formulation of the marginal theory of value, in terms of choices between scarce satisfactions, has always been recognised as its contribution to the solution of this problem by completing both the premises of the Ricardian theory and that theory itself.[2] Similarly Pareto's criticism of Marshall's use of the " one at a time " method on the assumption that the data excluded had either no organic influence on the results, or that it was of the second order of smalls, turned on the same point.[3] Finally we can point to the interest that has been excited by recent discussions of " the path " in querying the validity of both Marshall's and Pareto's analysis on the same grounds.[4]

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[1] Cf. Schumpeter: *Dogmen und Methodengeschichte. III. Das Klassische System*, par. 5, and Bonar: *Philosophy and Political Economy*, Book III, Chap. 2.

[2] Dr. Kaufmann has recently suggested that the only difference between the deductive and empirical methods is as to the desirability of formulating general or particular laws in particular cases, pointing out that each method makes use of an assumption as to the nature of cause and effect and are therefore to that extent both hypothetical. (*Review of Economic Studies*, February, 1934, "The Concept of Law in Economic Science"). Welcome though any attempt to bring about a rapprochement between the exponents of the various methods is, Dr. Kaufmann appears in this respect to have gone too far and merged three questions at least, into one. The first and most fundamental is as to the existence of independent uniformities of economic phenomena; until agreement is reached upon this point it is useless to try and consider the dispute between the sociological historians and the deductive economists as a question of degree. The second is as to the best method of finding economic laws, the empirical versus the deductive; this in fact is a question of degree turning on opinion as to practicability, etc., and it is this question that Kaufmann really resolves, but it had been done long ago. See section II below. The third is as to the best method of dealing with particular problems, whether by applying general laws which do not take into account the particular premises, or by treating all premises as particular and ignoring the general implications. This is perhaps a dispute which is really one of degree, but by treating it as one, there is a danger of obscuring the divergence in outlook involved between the difference of emphasis on general and particular propositions respectively. Cf. discussion of the Senior, Mill, Cairnes controversy below p. 299 *et seq.*

I

It is impossible in the small space available to describe the discussions on method previous to Senior's first appointment to the Drummond Chair at Oxford in 1825.[1] A very brief outline, however, of the main issues involved in the Ricardo-Malthus-Say controversy is necessary for the sake of continuity.

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[1] J. S. Mill : *Essays on Unsettled Questions :* " On the Definition of Political Economy; and on the Method of Investigation Proper to it."

[2] See Wicksteed : *Collected Works*, Vol II. " The Scope and Method of Political Economy in the Light of the Marginal Theory of Distribution."

[3] See *Principles of Economics*, Appendices B, C and D, for the fullest exposition of Marshall's method. His justification of the use of the hypothetical method is to be found in Appendix C in its most concise form. " It is true that the forces with which economics deal have one advantage for deductive treatment in that the method of combination is, as Mill observed, that of mechanics rather than chemistry. That is to say that when we know the action of two economic forces separately . . . we can predict fairly well their conjoint action without waiting for specific experience of it." Pareto's particular objection to the literary economists was just this assumption. *Manuel d'Economie Politique*, pp. 219–226.

[4] See Wicksteed's criticism of Marshall's theory of consumer's surplus. *Collected Works*, Vol. II, pp. 467–473. The problem has, however, cropped up in practically all discussions of the concept of a perfect market, see for example Wicksell's criticism of Jevons in *Uber Wert, Kapital und Rente*, Chap. 2, par. 5. Recently the problem has been stated in general terms by Dr. Rosenstein-Rodan : " Das Zeitmoment in der Mathematischen Theorie des Gleichgewichtes," *Zeitschrift für Nationalökonomie*, May, 1929, and " The Rôle of Time in Economic Theory," ECONOMICA, Feb., 1934.

Ricardo set the ball rolling by introducing the method of isolating economic tendencies by the use of strong cases.[2] But there can be no doubt that Ricardo thought that he was merely making easier the description of certain fundamental tendencies existing in the real world, for essentially his premises were the same as Adam Smith's. Malthus, however, believed it was impossible to select data in this way, since he considered that long and short run tendencies were inextricably interconnected. It was necessary therefore, he argued, to base all analysis on an extensive knowledge of facts, and to proceed from the short to the long period.[3] Essentially it was round this point that Malthus' criticisms of Ricardo revolved.[4] Say, who was essentially in agreement with Malthus on Ricardo's shortcomings in this matter, considered that the only really scientific method of investigation was that of Baconian induction. The only way to discover scientific laws, he argued, was by observation of the uniformities of phenomena. The essential preliminary was, therefore, the collection of general facts, i.e. induction.[5] But like every other advocate of the empirical method in economic science, he was quite unable to explain how the general facts can be isolated from the others in the absence of economic laboratories.[6]

It is evident that by the time Senior went to lecture at

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[1] These will be treated more fully in a forthcoming book on Nassau Senior.

[2] Ricardo : *Principles of Political Economy and Taxation.*

[3] Malthus : *Principles of Political Economy*, Preface.

[4] The discussions between Ricardo and Malthus are to be found principally in Malthus' Preface and in various scattered passages throughout his *Principles*, and in *Ricardo's Letters to Malthus* (Edited by Bonar, 1887) and to *Hutches Trower* (edited by Bonar and Hollander, 1899). Considerable light is also thrown on their disagreements by *Ricardo's Notes on Malthus* (edited by Gregory and Hollander).

[5] *Traité d'Economie Politique :* " Discours Préliminaire ", particularly pp. 3–16 (6th edition). See also *Mélanges de J. B. Say* for the correspondence between Say and Ricardo which contains numerous references to these questions of method, also Say's letter to Malthus, Feb. 4th, 1827.

[6] It is impossible to consider the points of view of other writers, such as Torrens and McCulloch, here, or to discuss the question of the scope of economics. Torrens' views on method, etc., are contained in the Introduction to his *Essay on the Production of Wealth*, and McCulloch's in the Preface to his *Principles of Political Economy*. For the sake of completeness Richard Jones' more or less isolated advocation of the historical method in 1833 (just three years after the end of Senior's first tenure of the Oxford Professorship) should be mentioned. *Inaugural Lecture at King's College*, London, 1833. (Reprinted in his *Literary Remains*, 1859.) Jones was the exception which proves the rule, for his discourses on method did not attract any interest among his English contemporaries.

Oxford in 1826 the principal problems of the deductive method in economics had been raised in one form or another. But with the exception of Say's *Discours Préliminaire*, no attempt had been made to consider systematically how far the open or tacit claims as to reality and completeness of the premises were justified. This gap Senior attempted to fill in his Introductory Lecture and the succeeding lectures on the fundamental propositions, and at intervals during his whole active life as an economist.

The Introductory Lecture delivered at Oxford in 1826, though not in itself an important contribution to the solution of problems of scope, showed the main lines of approach which he subsequently developed. As his chief interest in economics was the light it might be expected to throw on the social questions connected with the prevalent poverty of the working classes, it is not surprising that he started with a wide definition of the scope of economics. Thus economics was defined as

> " the science which teaches in what wealth consists—by what agents it is produced—and according to what laws it is distributed—and what are the institutions and customs by which production may be facilitated and distribution regulated so as to give the largest possible amount of wealth to each individual."[1]

He went on immediately to justify this definition by explaining the nature of the premises on which it was founded :

> " The first or theoretic branch is that which explains the nature, production, and distribution of wealth, and will be found to rest on a few very general propositions, which are the result of observation or consciousness, and which almost every man, as soon as he hears them, admits as familiar to his thoughts, or at least included in his previous knowledge.
>
> " Its conclusions are nearly as general as its premises—those which relate to the nature and production of wealth, are universally true ; and though those which relate to the distribution of wealth are liable to be affected by peculiar institutions of particular countries—in the cases for instance of slavery, corn laws, or poor laws—the natural state of things can be laid down as the general

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[1] *Introductory Lecture*, 1826, p. 7.

> rule, and the anomalies produced by particular disturbing causes can be afterwards accounted for."[1]

This general idea, of the nature of a science of economics based on general propositions covering the major phenomena affecting economic phenomena, he retained unchanged to the end of his life, expanding it in the *Political Economy* in 1836 and in the Lectures of 1847.

As to the second branch, the practical, however, his opinion underwent two major modifications in 1836 and in 1847. But in 1826 this branch was allowed the same general position by Senior as by McCulloch :

> " The practical branch of the science, that of which the office is to ascertain what institutions are most favourable to wealth, is a far more arduous study. Many of its premises indeed rest on the same evidence as those of the first branch, for they are the conclusions of that branch—but it has many which depend on induction from phenomena, numerous, difficult of enumeration, and of which the real sequence often differs widely from the apparent one. The machinery of civilised society is worked by so many antagonistic springs ; the dislike of labour, the desire for immediate enjoyment, the love of accumulation are perpetually counteracting one another, and they produce such opposite conduct not only in different individuals but in whole masses of people, that we are liable to the greatest mistakes when we endeavour to assign motives to past conduct, or to predict the conduct which a new motive will produce."[2]

Even in 1826 Senior laid little general claim to any degree of authority for the practical branch comparable with that claimed for the theoretical, and maintained that it was inattention to the necessary distinction between them that has brought economics into disrepute in many quarters. Nevertheless at this stage he suggested that many of the most important practical conclusions rest so immediately on those of the theoretical branch as to have the same certainty. He did not explain which practical conclusions these were.

> " Inattention to the distinction between the theoretical and the practical branches of Political Economy appears to me to have occasioned much of the difference of opinion

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[1] *Introductory Lecture*, 1826, p. 8.

[2] *Ibid.*, pp. 8–9.

> which prevails as to the certainty of its conclusion. Those who assert that it approaches to the accuracy of logic or mechanics must either have confined their attention to the theoretic branch, or have forgotten that the practical branch must sometimes draw its premises from particular facts respecting particular climates, soils, and seasons, and must sometimes take into account the influence of every human passion and appetite, under every modification of government and knowledge.
>
> " On the other hand the uncertainty which affects many of the investigations of Political Economists has been rashly attributed to them all. Because from probable premises they have deduced only probable conclusions it has been sometimes supposed that probability, and that of a low degree, is all they can attain."[1]

But he almost immediately introduced the important modification mentioned above:

> " I hope also to show that many conclusions, and those of the highest importance, in the practical branch, rest so immediately on the conclusions of the theoretic branch as to possess equal certainty and universality."[2]

Despite this rather nebulous attempt to differentiate between the certainty of theoretical analysis, and the uncertainty attaching to its application to particular cases, there was already a significant difference between Senior's statement and McCulloch's. He stressed the unpredictability of human actions, the complex of human passions, the variations in civilised development, without attempting to relegate them to the category of not very important exceptions like McCulloch, who only admitted that occasionally discretion has to be used in dealing with particular problems.[3]

Probably, however, Senior's discussion of the fundamental premises in economics was the most significant difference between his treatment of method and that of most of his predecessors. Not merely were they selected so as to cover all at once the main phenomena which could affect economic data, but he went into their validity and universality with the greatest care. There were four fundamental propositions and a fundamental definition which can be summarised briefly as follows:—

The definition was that of wealth: this Senior defined to cover all goods and services which possess utility and are scarce, in other words everything which enters into the circle of exchange.[1] The importance of this definition became evident immediately he stated the first fundamental proposition :

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[1] *Introductory Lecture*, 1826, p. 10.

[2] *Ibid.*, p. 11.

[3] McCulloch: *Principles of Political Economy*, 3rd ed., Preface, p. 14.

> " That every man is desirous to obtain, with as little sacrifice as possible, as much as possible of the articles of wealth."[2]

Now this proposition is the common one at the basis of all classical economics, and it is only by defining wealth to cover all services as well as material goods, that it is possible to claim that it covers the complex of actions which may influence the pricing process. As long as wealth is confined to material goods, the applicability of economic laws is limited to only a portion of the objects of exchange, and depends on the assumption that the objects excluded have no significant influence on the pricing process of the other commodities. Any such assumption according to the marginal theory of price necessarily prevents economics having any claim to be based on positive premises.[3] It is arguable, however, that as far as a physical cost of production theory is valid, this is not true, as the characteristic of the theory is the determination of price by comparisons of physical cost, and that in consequence it is possible to limit the circle of exchange as much as desired. Instead of being unrealistic the application of the analysis is merely artificially limited. It seems to me probable that the realisation of this independence accounts for the cheerful way in which Ricardo omitted to consider the pricing process of services, and that he forgot that this could not justify the exclusion of services from the circle of exchange in the short run, where demand was admitted to have considerable influence. It is less understandable that Malthus, who started by maintaining that demand was as important an influence as cost of production, should deliberately exclude services from consideration.

Senior, however, was not content with this vital alteration. The explanation of the way in which the desire for wealth affects both the demand for individual commodities and services and the willingness to take action in order to obtain that wealth, is clearly an essential part of the proof of the universal sufficiency of this motive to account for human action in connection with wealth. The detailed discussion of these points is of course the substance of the theories of value, wages, profits, rent, etc., but the basic lines of the influence and the scope of the motive Senior explained in general terms in discussing the first proposition :

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[1] *Introductory Lecture*, p. 35.

[2] *Introductory Lecture*, p. 35.

[3] It is not clear from Say's *Traité* whether he thought that Malthus' and Ricardo's omission of immaterial goods from wealth destroyed the validity of their theories of value as applied to the actual world,

> " In stating that every man desires to obtain additional wealth with as little sacrifice as possible, we must not be supposed to mean that everybody, or indeed anybody, wishes for an indefinite quantity of everything ; still less as stating that wealth, though the universal, either is or ought to be the principal object of human desire. What we mean to state is that no person feels his whole wants to be adequately supplied ; that every person has some unsatisfied desires which he believes that additional wealth would gratify. The nature and urgency of each individual's wants are as various as the differences in individual character. Some may wish for power, others for distinction, others for leisure ; some require bodily, and others mental amusement ; some are anxious to produce important advantage to the public ; and there are few —perhaps there are none—who if it could be done by a wish, would not benefit their acquaintance and friends. Money seems to be the only object for which the desire is universal ; and it is so because money is abstract wealth . . .
>
> " An equal diversity exists in the amount and the kind of the sacrifice which different individuals, or even the same individual, will encounter in the pursuit of wealth. And not only is the same sacrifice more severe for one than for another, as some will not give up ease or leisure for study, others good air and a country life and others recreation and society, but the absolute desire for wealth on the one hand and the absolute will to encounter toils and privations in its pursuit on the other, are stronger in some men than in others."[1]

It is difficult to find any better statement of the essential premises of the economics of choice, or of the reality and sufficiency of those premises as a basis for a theory of value applicable to the real world, even in modern literature.

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[1] Course I., Lecture 2, 1826–7. The bulk of the discussions of the Fundamental Propositions in the *Political Economy* was taken unaltered from this course of Lectures.

The other three fundamental propositions are premises which Senior thought would cover the main observed phenomena necessary to the theory of distribution and production:

> (2) "That the population of the world, or in other words the number of persons inhabiting it, is limited only by moral or physical evil, or by fear of a deficiency of those articles of wealth which the habit of the individuals of each class of its inhabitants lead them to require."
>
> (3) "That the power of labour, and of the other instruments of production which produce wealth, may be indefinitely increased by using their products as the means of further production."
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> (4) "That agricultural skill remaining the same, additional labour employed on the land within a given district produces in general a less proportionate return, or in other words, that though, with every increase of the labour bestowed, the aggregate return is increased, the increase of the return is not in proportion to the increase of the labour."[1]

The inclusion of the doctrine of population among the fundamental propositions may seem surprising in view of Senior's general views on the probability of subsistence increasing at least as fast, if not faster, than population. But it must be remembered that this was only Senior's opinion if there was opportunity for the counteracting motive of ambition.

The third and fourth propositions are of course merely statements of the productivity of capital, derived from observation, and of the law of diminishing returns in agriculture, also derived from observation.

The first two propositions are thus based primarily on principles of human nature, and the last two on general empirical observation. Senior's general attitude to method, an attitude which he elaborated but never changed, was that theoretical economics is a deductive science based on a group of premises which cover the main data relevant to the specific objects of the science, and which are drawn from the real world by consciousness and observation. Economics is thus, he argued, as much a real science as any of the natural sciences, but owing to the type of data used is not an empirical science in the ordinary sense of the term.[1]

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[1] *Political Economy*, p. 26, 6th edition (all quotations from this edition). Except for verbal alterations these are the same as in Course I., Lecture 1, 1826–7.

The publication of the *Political Economy* in 1836 marked an important change in Senior's attitude towards the scope of economics as a whole, and its relation to policy, though the treatment of the nature and premises of economic theory was simply incorporated from the Lectures. He now limited economics strictly to the field of pure theory:

> "The science which treats of the nature, the production and the distribution of wealth."[2]

The explanation of the change that he himself gave was that it is beyond the bounds of human capacity to study all the other branches of knowledge necessary to apply economic conclusions to particular cases, or to give advice on policy at the same time as mastering economic theory:

> "We believe that such inquiries far exceed the bounds of any treatise, and indeed of any single mind. We believe that by confining our own and the reader's attention to the Nature, Production, and Distribution of Wealth, we shall produce a more clear, and complete, and instructive work than if we allowed ourselves to wander into the more interesting and more important, but far less definite fields by which the comparatively narrow path of Political Economy is surrounded. The question is: To what extent and under what circumstances the possession of Wealth is, on the whole, beneficial or injurious to its possessor, or to the society of which he is a member?—What distribution of wealth is most desirable in each different state of society? And what are the means by which any given country can facilitate such a distribution?—All these are questions of great interest and difficulty, but no more form part of the science of Political Economy in the sense in which we use that term, than Navigation forms part of the science of Astronomy. The Principles supplied by Political Economy are indeed necessary elements in their solution, but they are not the only, or even the most important elements. The writer who pursues such investigations is in fact engaged on the great science of legislation; a science which requires a knowledge of the general

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[1] This idea was developed at length in the later Lectures, 1847–52. See below.

[2] *Political Economy*, 6th ed., p. 1.

> principles supplied by Political Economy, but differs from it essentially in its subject, its premises, and its conclusions. The subject of legislation is not Wealth but Human Welfare."[1]

Under this demarcation of economics the economist is not even allowed to tender advice, his function is no longer to analyse the effect of institutions and customs with the object of giving advice on how to increase wealth, but merely to state general economic principles, which the legislator may be justified in ignoring.

> " But his conclusions, whatever be their generality and their truth, do not authorise him in adding a single syllable of advice. That privilege belongs to the writer or the statesman who has considered all the causes which may impede or promote the general welfare of those whom he addresses, not to the theorist who has considered only one, though among the most important, of those causes. The business of a Political Economist is neither to recommend nor to dissuade, but to state general principles, which it is fatal to neglect, but neither advisable nor perhaps practicable to use as the sole, or even the principal, guides in the actual conduct of affairs. . . . To decide in each case how far these conclusions are to be acted upon belongs to the art of government, an art of which Political Economy is only one of many subservient sciences ; which involves the consideration of motives, of which the desire for Wealth is only one among many, and aims at objects to which the possession of Wealth is only a subordinate means."[2]

This severe limitation of the field of economists,[3] not because their conclusions are inapplicable to real life, nor because they are hypothetical, but because there is a marked divergence between economic criteria and the criteria of government, was indeed an important admission, and should have gone some way to dispel the popular belief that the classical economists automatically identified social and economic criteria.[4] This sudden change of mind must be attributed, I think, to Senior's practical experience derived from his investigations into the state of Ireland and from his position on the Poor Law Commission, which brought home to him the variety of non-economic considerations involved in any far-reaching policy.

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[1] *Political Economy*, 6th ed., p. 2.

[2] *Ibid.*, p. 3.

[3] It is not, I think, correct to argue that this limitation forms an arbitrary barrier, the application of the economic theory of choice. All that it involves is the abstention of economists from trying to influence a government's actual choice except by explaining the economic effects of any particular decision.

[4] The similarity of this opinion with Say's (*Traité :* " Discours Préliminaire ", 6th ed., pp. 1 and 2) is another indication of the generality of the discussions of economic method.

Senior himself maintained that the confusion of the science of Political Economy with the arts to which it is subsidiary, accounted for the lack of progress in the science for two reasons. Firstly, that it had " excited in the public unfavourable prejudices," because people thought that economists ought to deal with welfare as well as wealth on the one hand, and confused wealth with welfare on the other. Secondly, that it misled economists " both with respect to the object of their science and the means of obtaining it," the former by seducing them into vague fields of conjecture from which no practical results might be expected, and the latter by encouraging the belief that economics consisted in the collection of vast quantities of facts. The collection of facts he allowed to be necessary in any problem of applied economics, but did little to improve the laws of economics which were based on a few general facts :

> " The facts on which the general principles of the science rest may be stated in a very few sentences, and indeed in a very few words. But that the reasoning from these facts, the drawing from them of correct conclusions, is a matter of great difficulty, may be inferred from the imperfect state in which the science is now found after it has now been so long and so intensely studied."[1]

In 1836, in short, Senior limited the science of economics to an exact science based on the positive premises contained in four fundamental propositions and the definition of wealth. The existence of an art of economics he categorically denied. Everything that is normally included in the art of economics Senior classed indiscriminately as the art of government ; any proposition that had for its object welfare rather than wealth is part of the science of government, and the only work that economists are capable of doing, quae economists, is to formulate general principles of economics and apply them to particular problems.

In effect, Senior's introduction to the *Political Economy* was inspired by the belief that economists had bitten off more than they could chew. The entirely arbitrary line which he drew between the work of examining particular applications of economic principles and that of drawing conclusions from them as to the most economic way of increasing wealth, which is after all the sole subject of the art, can only be explained on this basis. He was not in fact laying down a real methodological distinction, but merely giving expression to his own opinion on the parlous state of economics in general.[1]

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[1] *Political Economy*, p. 4.

II

Senior's return to Oxford in 1847 gave him an opportunity of dealing with questions of scope and method at greater length than before. The need of such a procedure was greater he believed, probably rightly, than earlier. Despite the triumph of the teaching of economists in matters of fiscal policy, the validity of the general body of economic theory was being attacked under the impression that it was the foundation of a policy of *laissez faire* in social questions. Public attention was focussed on the social problems of the industrial towns, stimulated by the innumerable reports on their conditions and the increasingly powerful working-class agitation. By associating the opposition of economists, such as McCulloch and Senior himself, to the ten-hour movement with a general policy of *laissez faire*, it was easy enough for the man in the street to overlook the reforming movements which the same economists supported. At the same time business interests were not above claiming the support of economic theory whenever it might be useful in opposing social legislation, and the romantic younger section of the Tory Party inspired by Carlyle had made economists the special target of their criticisms of industrialism.[2] Some attempt to present the different issues mixed up in this opposition by explaining the foundations and scope of economics was obviously necessary, if only as a protest against the prevalent misconceptions.

With this object in view Senior set out to overhaul the foundations of economic method. In marked contrast to

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[1] McCulloch protested strongly against this excision of the art from economics (*Political Economy*, Preface to 3rd ed.), for he naturally thought that the main work of formulating principles had been completed by Ricardo and the only fresh fields for economists were those of the art.

[2] Cf. Schumpeter: *Dogmen und Methodengeschichte. Part III. das Klassische System*, par. 6, and Leslie Stephens: *English Utilitarians*, Vol III., Chaps. 3 and 4.

J. S. Mill he maintained that economics was seriously inadequate and showing little sign of improvement. This lack of progress he traced back to three factors:—firstly that everyone was personally interested in the results of economic analysis, a fact which militated against impartiality; secondly, that the general interest in the subject had led to the invasion of the field by people with no general background of economics, and interested only in one aspect which they took out of its setting; thirdly, the inability of economists to realise the limitations of their own knowledge. It was this third difficulty, one which he had attempted to deal with in the *Political Economy*, that affected his general discussion of method.

> "But many who have avowedly devoted themselves to its pursuit seem to have misdirected their efforts, for want of a clear conception of the object of their investigations, and of the manner in which they ought to be conducted, or the nature of the difficulties to be surmounted. If the teacher of political economy has not decided whether he is engaged in a science or in an art, whether it is his duty to explain phenomena or to deliver precepts, whether his principal business is to observe facts or to deduce inferences, whether his premises are all physical truths or depend partly on assumptions —his work though it may contain partial views of the highest value cannot possibly form a clear and consistent whole."[1]

Senior's attempt to clear up these obscurities involved him in yet another attempt to decide whether there is an art of economics as well as a science, and in an inquiry into the nature of the evidence on which economic theory is founded.

The problem of the existence of an art of economics was one upon which Senior found it difficult to make up his mind. In 1826 he had already admitted the existence of the art in fairly generous terms; in 1836, bothered no doubt by the importance of the non-economic considerations involved in the solution of any problem, he had gone to the other extreme and limited economics solely to the science, in the hope of separating the reputation of economic theory from confusion with that of any particular policy. By 1847, however, he had changed his mind again, returned to a middle position, and admitted that an art of economics might exist, in fact that there were two possible arts as well as the science. He now defined the science as stating "the laws regulating the production and distribution of wealth so far as they depend on the action of the human mind," introducing the last clause to avoid any confusion of economics with technology. The art might be defined, he suggested, as either "the art which points out the institutions and habits most conducive to the production and accumulation of wealth," or as "the art which points out the institutions and habits most conducive to that production, accumulation, and distribution of wealth which is most favourable to the happiness of mankind."[1]

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[1] Lectures 1847–52, Course I., Lecture I., published 1852, pp. 15–16.

Both these definitions of the art of economics were, he thought, attractive and plausible, but he denied that it was yet possible for them actually to exist.

> "I have already remarked that all the practical arts draw their principles from sciences. If, however, the teacher of an art were to attempt to treat also the different sciences on which it was founded, his treatise would want unity of subject and would be inconveniently long. He generally therefore assumes his scientific principles as established and refers to them as well known. . . . Many of the sciences and of the arts which are subservient to political economy may thus be treated. . . . There is one science, however, to which that treatment cannot as yet be applied, and it is the science most intimately connected with the art of political economy, that is to say the science which states the laws regulating the production, accumulation, and distribution of wealth, or in other words the science (as distinguished from the art) of Political Economy itself. A time will come when the outline of the science will be clearly made out and generally recognised. . . . I scarcely need repeat how far this is from being the case at present."[2]

In fact, therefore, although Senior admitted the possibility of economics being treated as an art of direct assistance in problems of policy, he refused to admit that it was justifiable to discuss them quae economists. His own discussions of social problems, he said, were undertaken not as an economist but as a moralist or statesman, and he did not " hope from his readers the full conviction which follows scientific reasoning."[1]

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[1] Lectures 1847–52, Course I., Lecture 3, published 1852, p. 36.

[2] *Ibid.*, Lecture 3, pp. 51–2.

But Senior realised that the reputation of economics did not only depend on its connection or lack of connection with particular policies, but also on the foundation of its claim to explain actual phenomena. It was in attempting to resolve this question that he made his most important contribution to the methodology of economics.

Sciences, he argued, can be divided into the physical, which study the properties of matter, and the mental, which study " the sensations, faculties and habits of the human mind, and regard in matter only the qualities which produce them." The only sources from which premises for either group can be drawn are observation, consciousness, and hypothesis, the physical sciences depending on observation and hypothesis, the mental mainly on consciousness.

> " The physical sciences, being only secondarily conversant with the mind draw their premises almost exclusively from observation or hypothesis. Those which treat only of magnitude or number, or, as they are mainly called, the pure sciences, draw them entirely from hypothesis . . . those which abstain from hypothesis depend on observation, e.g. astronomy and chemistry. The physical arts are almost exclusively based on observation. As their object is to produce positive effects they trust as little as possible to hypothesis ; and the mental phenomena which they have to consider are generally few and simple . . .
>
> " On the other hand, the mental sciences and the mental arts draw their premises principally from consciousness. The subjects with which they are chiefly conversant are the workings of the human mind, and the only workings a man really knows are his own."[2]

To complete Senior's classification before considering its validity, it is necessary to notice his description of the major difficulty of mental sciences as related to the inability to make experiments, and his actual classification of economics as a mental science. The difficulty is the vital one of justifying the interpretation of the workings of other people's minds in terms of one's own.

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[1] Lectures 1847-52, Course I., Lecture 3, p. 55.

[2] *Ibid.*, Lecture 2, published 1852, p. 25.

> " When a man endeavours to discover what is passing in the mind of another by reflecting on what has passed, and is passing in his own, the certainty of the result depends of course on the degree in which the two minds coincide . . . and this accounts for the mismanagement of the lower orders, children, savages and madmen, by their mental superiors. . . . The mental peculiarities of other men are likely to lead him astray in particular instances. His own mental peculiarities are likely to lead him astray on all occasions."[1]

This difficulty of interpretation, which makes the inability of the mental sciences to conduct experiments so serious, is only partly eliminated by the possibility of conducting experiments on our own minds.

> " When we direct attention to the workings of our own minds, that is to say when we search for premises by means of consciousness, instead of by means of observation, our powers of trying experiments are much greater."[2]

After this discussion in general terms we might have expected a detailed discussion of how far the premises of economics are derived from observation or consciousness, but Senior left this out and classed economics as a mental science purely on account of the nature of its subject matter.

> " Unquestionably the economist has much to do with matter. The phenomena attending the production of material wealth occupy a great part of his attention; and these depend mainly on the laws of matter. The efficacy of machinery, the diminishing productiveness under certain circumstances of successive applications of capital to land, and the fecundity of the human species, are all important premises in Political Economy and are all laws of matter. But the Political Economist dwells on them only with reference to the mental phenomena which they serve to explain; he considers them as among the motives to the accumulation of capital, as among the sources of rent, and as among the regulators of profits, and as among the causes which promote or retard the pressure of population on subsistence. . . . All the technical terms, therefore, of Political Economy represent either purely mental ideas, such as demand, utility, value

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[1] Lectures 1847–52, Course I., Lecture 2, p. 2.

[2] *Ibid.*, Lecture 2, p. 31.

> and abstinence, or objects which, though some of them may be material, are considered by the Political Economist so far only as they are results or causes of certain affectations of the human mind, such as wealth, capital, rent, wages and profit."[1]

Senior's classification of economics as a mental study was objected to by Cairnes,[2] who declared that it no more investigated the laws of mind than of matter, and must be classed as a hybrid. The question was, however, largely one of terminology since Cairnes did not dispute that the characteristic of the mental sciences, inability to experiment, was common to economics.

By pointing out this particular condition of economic science, and using it to explain the futility of trying to find its premises by detailed induction, Senior demonstrated the inapplicability of the Baconian method to economics, lip-service to which had led to inconsistencies in economic methodology. Say, for example, starting with a full-dress statement of the necessity of using the Baconian method, had finally concealed the difficulty of applying it in question-begging terms ; Torrens had more elaborately, but equally vaguely, talked of the synthesis of the results of induction ; while McCulloch, after stating that induction was as necessary in economics as in physical sciences, had simply ignored the problem. Nor has any other exponent of the empirical approach managed to get over the difficulty, except by deciding beforehand from general observation, and/or consciousness, the uniformities to be isolated, and then isolated them—scarcely a scientific procedure. In fact, the use made of detailed induction by both schools in formulating premises has been confined to testing their generality. Thus although the issue between the two schools can, if Dr. Kaufmann likes,[3] be called one of degree not of principle, it is really simply one of the relative practicability of the two methods and can only be decided on that basis. The deductive economists can no more claim greater truth for their laws than the natural scientists, for in both cases they depend on the same factors, the validity of the premises and the logic of the argument. In short, as both Mill and Senior appreciated, the dispute is not one of the absolute merits of either method but of their relative suitability to economics.

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[1] Lectures 1847-52, Course I., Lecture 2, p. 33. This paragraph is almost the same as one in J. S. Mill's essay on "The Definition of Political Economy", *Unsettled Questions of Political Economy*. A Summary of Senior's views on Method is contained in his review of J. S. Mill's "Principles of Political Economy" in the *Edinboro' Review*, 1848.

[2] Cairnes, *Logical Method of Political Economy*, Chap. 2, par. 2.

[3] See p. 282, note 2.

The resolution of the confusion of this question of induction, however, was merely a preliminary to the more important question of the nature of the premises of economic science. The distinction between empirical and deductive sciences has, Senior pointed out, a corollary in the characteristic ability of the mental sciences to substitute for specific observations general observations based on consciousness, and therefore the premises of economics may be founded on general observation aided by consciousness. The most important of the fundamental uniformities derived by Senior in this way was, of course, the general desire for wealth.

So far Senior, Mill and Cairnes were in complete agreement, but the step next in the analysis, and one of great interest, involved a breach between Mill and Senior which left Cairnes more or less facing all ways in his attempt to bridge it.[1] Senior's concept of hypothetical sciences was that they are based, either from necessity or choice, on assumed premises, by which he meant that some data are selected, in the case of economics by observation and consciousness, while other data almost equally relevant are excluded. Consequently the relation of the laws of hypothetical sciences to the real world is ambiguous, they may or may not be present as tendencies. To treat economics as a hypothetical science in this way he believed to be both unnecessary and dangerous, and it was on these grounds that he criticised Mill's concept of the economic man. Mill had maintained that since the desire for wealth is the human motive most relevant to economics, man may be regarded by economists as motivated solely by it. The abstraction from reality involved simplifies the analysis, but as he admitted makes economics essentially a hypothetical science.[2]

> "What is now commonly understood by the term 'Political Economy' is not the science of speculative politics but a branch of that science. It does not treat of the whole of man's nature as modified by the social

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[1] *Logical Method of Political Economy*, Chap. 2, par. 3.

[2] Mill considered that the "*a priori*" method, as he termed the hypothetical method, was the only one suitable to abstract or mental sciences. "On the definition of Political Economy, &c." *Essays on Unsettled Questions*, 3rd ed., pp. 143–144.

state, nor of the whole conduct of man in society. It is concerned with him solely as a being who desires to possess wealth, and who is capable of judging the comparative efficacy of the means for obtaining that end. It predicts only such of the phenomena of the social state as takes place in consequence of the pursuit of wealth. It makes entire abstraction of every other human passion or motive; except those which may be regarded as perpetually antagonising principles to the desire for wealth, namely, the aversion to labour, and desire of present enjoyment of costly indulgences. These it takes, to a certain extent, into its calculations, because they do not merely, like other desires, occasionally conflict with the desire for wealth, but accompany it always as a drag or impediment and are therefore inseparably mixed up in the consideration of it. Political economy considers mankind solely as occupied in acquiring and consuming wealth. . . . The science then proceeds to investigate the laws which govern these several operations, under the supposition that man is a being who is determined, by the necessity of his nature, to prefer a greater portion of wealth to a smaller in all cases, without any other exception than that constituted by the counter motives already specified. Not that any political economist was ever so absurd as to suppose that mankind are really constituted thus, but because this is the mode in which a science must necessarily proceed. When an effect depends upon a concurrence of causes, those causes must be studied one at a time, and their laws separately investigated if we wish through the causes to obtain the power of either predicting or controlling the effect; . . . The manner in which it necessarily proceeds is that of treating the main and acknowledged end as if it were the sole end; which of all hypothesis equally simple is the nearest to the truth."[1]

Mill's argument was thus simply that the method applicable to the mental sciences is, by reason of their complicated nature and the impossibility of making experiments, that of deduction from hypothetical premises based on selected data of particular importance and modification in applying conclusions to actual phenomena. When it is remembered that Mill confined wealth to material goods, the inadequacy of this hypothesis for investigating the pricing process becomes obvious. The two counteracting forces to the desire for wealth, the desires for leisure and immediate enjoyment, cover only a small section of the influences affecting the intensity of the desire for wealth, in particular omitting the concept of net advantages and the interdependence of values.

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[1] *Essays on Unsettled Questions*, 3rd ed., pp. 137–139.

Senior's opposition was vigorous:

> " But neither the reasoning of Mr. Mill, nor the example of Mr. Ricardo, induce me to treat Political Economy as a hypothetical science. I do not think it necessary, and if necessary I do not think it desirable.
>
> " It appears to me that if we are to substitute for Mr. Mill's hypothesis, that wealth and costly enjoyment are the ONLY object of human desire, the statement that they are universal and constant objects of desire, that they are desired by all men at all times, we shall have made an equally sound foundation for our subsequent reasonings, and have put a truth in the place of an arbitrary assumption. We shall not, it is true, from the fact that by acting in a particular manner a labourer may obtain higher wages, a capitalist higher profits, or a landlord higher rent, be able to infer that they will certainly act in that manner, but we shall be able to infer that they will do so in the absence of further disturbing causes. And if we are able, as will frequently be the case, to state the cases in which these causes may be expected to exist, and the force with which they are likely to operate, we shall have removed all objection to the positive as opposed to the hypothetical treatment of the science."[1]

Senior's particular objections to the hypothetical treatment were the perpetual danger of forgetting the hypothetical nature of the premises, its abstractness which he thought unattractive, and the absence of any check on the results by experience.

Cairnes attempted to resolve the difference between the two into a question of terminology, by demonstrating that to a considerable extent the question, as to whether a science should be considered hypothetical or positive, depends merely on whether we are considering the nature of the premises or the immediate applicability of results.[1] But this approach conceals the more important question which was really in dispute between Senior, Mill, and Ricardo, and which Cairnes himself suggests: the question of the completeness of the premises. It is obvious that the actual result of a general law in any particular case will be modified by the supplementary premises involved. The result is not determinate *a priori* from the general law, although that is based on positive premises. The general law expresses, as it were, the constant relations in the system of equations, the particular supplementary premises give the values of the variables. Neither Senior nor anyone else denied that. But, if the premises of the general law are not complete, a knowledge of the supplementary premises will only give the result, if the missing link is included in the supplementary premises.[2] Thus in the question of the definition of the desire for wealth: if it is stated in Mill's form that every one always prefers wealth to anything else with the added warning that it is only a hypothesis, the constant relation between the desire for wealth and all other conflicting motives is not defined completely by the general law. It remains necessary to introduce a further premise in each individual case stating the general relation of other motives to that of the desire for wealth, as well as evaluating the actual variables. Now Senior's explanation of the desire for wealth includes information as to the interconnections between the variables. In justice to Mill it must be remembered that he safeguarded himself by regarding his statement as a hypothesis, but Cairnes took Mill's statement as a positive premise, qualifying it by saying that it was incomplete but not indicating the possible importance of that incompleteness.[3]

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[1] Lectures 1847–8, Course I, Lecture 4, published 1852, p. 62.

Senior's substitution of net advantages for earnings is equivalent to defining in general terms the relation between all the variables which influence the distribution of resources between occupations, instead of leaving that relation to be considered afresh in each particular case.

It is evident, of course, that it was much easier for Senior than for Mill to bring the premises of the desire for wealth out of the realm of hypothesis since he included immaterial goods in wealth, while Mill excluded them. In this connection the sense in which Senior used the term hypothetical is of interest in the development of the theory of value. Frequent criticisms have been directed against the marginal theory because it is asserted that its general formulation does not cover all the variables, but leaves them to be fitted in. The reply has been, to prove by explaining the completeness of the premises that the *ceteris paribus* clauses are unnecessary, and that therefore the theory corresponds with reality since it includes all the relevant variables.

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[1] Cairnes: *Logical Method of Political Economy*, Chap. 3, par. 3.

Cf. J. M. Keynes: *Scope and Method of Political Economy*, Chap. 7, for a somewhat similar account of this controversy and for a description of Bagehot's position.

[2] Cairnes: *Logical Method of Political Economy*, Chap 3, par 3.

[3] This distinction was evidently considered so important by Senior as to constitute it one of principle.

As long as wealth was confined to material goods the necessity of the hypothesis of the economic man, though unperceived by anyone before J. S. Mill, was a fact, since it is impossible to deny the influence of desires other than the fundamental desire for wealth on values. Although in the "long run" the Ricardian cost of production theory of value approximately eliminates this difficulty, it does not in the "short run." It is possible that the adoption of the Smithian limitation of wealth to material goods is the real explanation of the persistence of the interest in the cost of production theory which, being applicable only in the "long run", so conveniently avoided these complexities.

In conclusion, it is of interest to draw attention to a recent illustration of the continuity of the discussion of the problems of the deductive method which has been furnished by Professor Mises in his book *Grundprobleme der Nationalökonomie*. Professor Mises argues that economic analysis must proceed from positive premises which are complete, in the sense of complete used throughout this paper, and that the essential premise is the recognised characteristic of man to truck and barter: "Menschliches Handeln ist bewusstes Verhalten des Menschen."[1] From this one fundamental characteristic all the general concepts of economics which are relevant to the formulation of general laws are derived.[2] Clearly this is the same approach as Senior's, and resembles Mill's as far as the derivation of economic concepts from the initial premise is concerned, but differs in regard to the nature of that premise itself. Allowing for Professor Mises' particular use of the term *a priori*, his interpretation of the significance of the Senior—Mill—Cairnes controversy as an attempt to complete and elucidate the nature of the basic premises of economics is the same as that adopted here.[1]

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[1] Ludwig von Mises, *Grundprobleme der Nationalökonomie*, p. 22.

[2] Mises, *Grundprobleme der Nationalökonomie*, pp. 22–34, "Umfang und Bedeutung des Systems der apriorischen Sätze."

The only fundamental difference between Mises' attitude and Senior's lies in Mises' apparent denial of the possibility of using any general empirical data, i.e. facts of general observation, as initial premises. This difference, however, turns upon Mises' general ideas of the nature of thought, and though of general philosophical importance, has little special relevance to economic method as such.

If the preceding account of the methodological discussions of the first part of the nineteenth century is correct it must be admitted that Senior, not Cairnes, was the most important writer on scope and method among the classical economists. Not only was Senior's contribution more original than that of Cairnes, but it has far more importance in relation to modern discussions of method. His attempt to formulate the premises of the theory of value in such a way as to make economics a positive science foreshadowed the later discussions of the methodological significance of the marginal theory of value. With regard to the scope of economics, Senior was not particularly original, but the difficulty he experienced in making up his mind is of considerable historical interest in that it was caused by realisation of the importance of dissociating economics from the policy of *laissez faire* at least as early as 1836. In short, Senior's attitude to the problems of the scope and method of economics had much in common with that of modern economists, and his contributions to their solution anticipated many of those of the last fifty or sixty years.

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[1] Mises, *Grundprobleme der Nationalökonomie*, pp. 18–20.

The Symmetry Between Import and Export Taxes

By A. P. Lerner

This note does not arrive at any conclusions not previously obtained by Bastable, Marshall and Pigou, but it shows the nature of the slip which led Edgeworth to conclusions contrary to theirs, and demonstrates the applicability of Marshall's "offer curve" apparatus to the elucidation of this problem.[1]

If there are two countries, *e* (England) and *g* (Germany), and two goods E and G which are produced by them respectively under conditions of perfect competition and in the absence of transport costs, tariffs or capital movements between the countries, the equilibrium of international trade is depicted by fig. 1. Along the axes are measured quantities of the goods E and G. Any radiant from the origin (like OR) indicates a rate at which E can be exchanged for G (e.g. ON of E for NS of G). The curves e and g are the offer curves of the countries. They indicate the amount of trade the inhabitants of the country are willing to do with the other country at each rate of exchange or price. (E.g. at the price indicated by the radiant R, Germany wants to move from O to S, giving up NS of G for ON of E, while England wants to go as far as T, giving up OL of E for LT of G.) The supply of E for G is greater than the demand and the rate of exchange becomes less favourable for England ; the radiant moves to the right to signify that a larger amount of E must be exchanged for each unit of G. The equilibrium position is reached when the radiant passes through the point where the offer curves cut. S coincides with T at P where OM of E is exchanged for MP of G, since both countries are willing to do just the same amount of trade. Supply is equal to demand.

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[1] Edgeworth, in an article on "The Pure Theory of International Trade" (*Economic Journal*, 1894, p. 435), writes: "The want of symmetry between the effects of restriction, and in particular taxes, on exports and imports, is perhaps the conclusion which can be most peculiarly and exclusively attributed to the mathematical method. The truth does not seem to have been attained by the ordinary methods." The peculiar result is not due to the use of mathematical methods but to an error in their use committed by Edgeworth. He attributes to the manner in which a tax is collected effects which are really due to the form in which it is spent. This results from the ambiguity, in discussing barter conditions, of the phrase "a tax on exports". On page 624 of the same number of the *Economic Journal*, in a further article of the same series, Edgeworth points out that Bastable in his "International Trade" disagrees with this conclusion, but he fails to meet the point.

In the *Economic Journal*, 1897, p. 397, in a review of the second edition of Bastable's "International Trade", Edgeworth recants his general proposition about the asymmetry of import and export taxes, but maintains that it is still true in the case of taxes imposed *in kind*. He seems here to be aware that it is not really the form of imposition of the tax that matters but its expenditure by the government, for he is careful in his second line of defence to say "Let a tax be imposed . . . and *consumed by the Government, or at any rate not sold* . . ." (my italics). He refers also to some very obscure footnotes in his series of articles on "The Pure Theory of Taxation" in the *Economic Journal* of 1897, which he alleges to contain recantations of his error. Yet in the collected papers (Vol. II, p. 39), published in 1925, the sentence quoted at the head of this note is repeated without significant alteration, although a good deal of the argument which appeared originally to justify it is left out. The omission is pointed out in a footnote which declares the missing argument "to be true only of some import taxes *in kind*" (Edgeworth's italics).

The essence of the true theory is to be found in Marshall's *Money Credit and Commerce*, pp. 181–182, and an admirable summary of the discussion is available in Pigou's *Public Finance*, pp. 198–200. One purpose of this note is to exonerate the "mathematical method" from Edgeworth's error—a task in which I am emboldened by my experience in having repeated this error in a Seminar at the London School of Economics.

The imposition of a tax, whether on imports or on exports, has the effect of making the price for traders in England different from that for traders in Germany, since some of the goods are intercepted at the customs house and appropriated by the tax collector. If the tax is on G and German traders give OD of G for DC of E (fig. 2), English traders receive only AB of G in exchange for the OA of E that they give up, BC being taken by the tax collector. The price to German traders is shown by the radiant Rg, while that to English traders is shown by Re.

These radiants form a *pencil*, the amplitude of which is a measure of the size of the tax, irrespective of whether E or G is the subject of the tax. The amplitude of the pencil must be measured not by the angle between the radiants but by drawing a perpendicular from any point on one of the radiants to the axis lying beyond the other radiant, and measuring the proportion of this perpendicular that lies within the pencil. The measure of the pencil is therefore $\frac{CB}{CA}$ or $\frac{BF}{BH}$ which are equal to each other—signifying the irrelevance for the measure whether E or G is taxed —since $\frac{CB}{CA} = \frac{CF}{CO} = \frac{BF}{BH} \left(= \frac{KC}{KD} \right)$. A pencil of the amplitude shown in figure 2 indicates a 40 per cent. tax if imposed entirely on imports (G) or entirely on exports (E), or both an import and an export tax of such size that the sum of their effects is equal to a 40 per cent. tax.[1]

Thus in place of the single price-radiant which was swung round to make supply equal to demand we have a pencil which must similarly be swung round to the equilibrium position, its amplitude being determined by the size of the tax or taxes and independent of whether they are imposed on imports or exports.

The point (U in fig. 2) where Re cuts the e curve shows the supply of E and the demand for G by English traders. The point (C) where Rg cuts the g curve shows the supply of G and the demand for E by German traders. It is at once clear that the supplies and demands thus given will never equal each other however much we swing the pencil round in either direction, since these points, lying on different radiants, can never coincide. If we draw a right-angle (CTU) parallel to and in the same sense as the axes, so that its upper extremity (C) lies at the point where the g curve is cut by Rg and its right hand extremity (U) lies at the point where the e curve is cut by Re, its vertical arm (CT) will measure the excess in the supply of G over its demand, while its horizontal arm (TU) will measure the excess of the supply of E over its demand.[2] But our right-angle, measured in this way, is nothing but the *absolute* measure of the amount of the taxes. Obviously our inability to find the equilibrium position where supply equals demand was due to our leaving out of account the demand by the government out of the proceeds of the tax.

We can now go ahead. Given the amplitude of the tax and the proportion in which the government (which here includes any beneficiaries from the taxation) consumes

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[1] E.g. two taxes of 20 per cent. and 25 per cent. have a joint effect of 40 per cent. since if these percentages are subtracted consecutively from any item there will remain 60 per cent. of the original amount whatever the order in which this is done. In Fig. 2 if T bisects CB, CT represents a 20 per cent. tax on G and TU a 25 per cent. tax on E. $\left(\frac{KC}{KD}=\frac{40}{100}, \frac{CT}{CB}=\frac{KU}{KB}=\frac{KS}{KC}=\frac{20}{40}.\right.$ $\frac{SC}{SD}$ = the rate of tax on E $=\frac{KC-KS}{KD-KS}=\frac{20}{80}=$ 25 per cent.). Alternatively, the pencil may be considered as the sum of the two adjacent pencils which would be traversed by CT and TU respectively, remembering that in adding the measure of the pencils, they must be summed as consecutive percentage subtractions, so that 20 per cent. + 25 per cent. = 40 per cent.

[2] Some readers may find it more satisfactory to imagine C and U to be connected by a *rectangle*, with sides parallel to the axes (CTUS in fig. 2) of which the left side and the base constitute our rightangle. The excess of the supply of G over its demand is then measured by the *height* of the rectangle, while the excess of the supply of E over its demand is measured by the *width* of the rectangle. Similarly we may call CT the *height* of our rightangle and TU its *width*.

E and G, we can find the equilibrium position by swinging the pencil round until the ratio between the length of the arms of the rightangle $\left(\frac{CT}{TU}\right)$ corresponds to the ratio in which the government consumes G and E. Thus in fig. 2, the government demand for CT of G and TU of E meets the excess of supply by the traders, supply is equal to demand and we have the equilibrium. If the pencil were swung slightly towards the right, the rightangle would become flatter and wider, so that with the same government demand there would be an excess of the supply of E over the demand and an excess of the demand for G over its supply. This would make E cheaper relatively to G so that the pencil would swing back again towards the left to the equilibrium position.

In the limiting case where the government consumes only E, the rightangle reduces to a horizontal line which traverses the pencil and meets the offer curves. Where only G is consumed by the government it becomes a vertical line.

From this examination it becomes clear that whether the tax is collected in G or in E makes no difference since this plays no part in the determination of the equilibrium position. We can draw another rightangle which shows the tax in the form in which it is collected. This taxation rightangle, like the government consumption rightangle, must fit into the pencil, since the pencil measures the amplitude of the tax, but, unlike the consumption rightangle, it need not meet the offer curves in its extremities. That was necessary for the consumption rightangle only because the government expenditure had to raise the traders' demands to their supplies.

The taxation rightangle is transformed into a consumption rightangle by a movement of one of its arms along one of the radiants until it reaches the offer curve. Thus in fig. 2, if the tax had been raised entirely in G, the taxation rightangle would have had the limiting shape of the vertical line CB. The government would then exchange G for E with English traders, moving the right extremity of the rightangle along Re from B to U and the corner of the rightangle from B to T, the rightangle acquiring the shape CTU and becoming a consumption rightangle. If the tax had been collected entirely in E, the initial taxation rightangle would have been a horizontal line traversing the pencil and passing through U and T. The excess of E over UT would then be exchanged by the government for TC of G. Edgeworth's error may be considered as the failure to distinguish between these two rightangles.

One extremity of the taxation rightangle may be expected to touch an offer curve, otherwise it can be transformed into a consumption rightangle only by moving the arms along *both* radiants. This would mean that the government exchanges G for E as well as E for G—which is not impossible, since the prices at which it can do this are divergent so that a profit emerges, but such an excursion of the government into active participation in foreign trade is unnecessary, for these profits are just what would flow to it from the taxation on the trade when done by the traders.

The apparatus we have been developing enables us to see the final equilibrium position resulting from the imposition of a tax of given size, given the ratio of its consumption between E and G, without drawing any of the magnifications, projections or other distortions of the offer curves that Edgeworth found necessary and which led to his slip. All we need do is to fit a government consumption rightangle of the appropriate dimensions into the offer curves. Figures 3, 4 and 5 all show the two limiting cases of government consumption being restricted to E (C_1U_1) or to G (C_2U_2) and one intermediate case with some of both E and G being consumed (CTU). In fig. 3 both offer curves are elastic. In fig. 4 both are inelastic. In fig. 5 e is elastic while g is inelastic. This figure can be turned round to show the reverse case.

From a cursory study of these figures it appears that in all cases (*a*) English traders are better off (U_1 is further along e so that more G is bought and on better terms) while German traders are worse off the greater the ratio of government consumption of E ; (*b*) English traders will be better off than in the absence of the tax (apart from any benefit they may derive from the government consumption) if the proportion of the tax (measured in G) that is spent on E is greater than the elasticity of the g curve over the relevant range;[1] and conversely that German traders will be better off than in the absence of the tax if the proportion of the tax (measured in E) that is spent on G is greater than the elasticity of the e curve. (*c*) In this latter case, the English nation, including those who enjoy the government expenditure, will be worse off than if there had been no tax, in the sense that the new position, including the government consumption, is one which is on a lower indifference curve as indicated by the offer curve. This raises many difficulties, but there is an unambiguous loss if at the same time the g curve is inelastic, for this gives a position (C_2 in fig. 4) where England gives up more E and receives less G than in the absence of the tax.

So far we have spoken in barter terms, but to suppose that the tax is raised in money and the money then spent on the commodities hardly affects even the form of the argument. There is the same divergence between the prices to the traders in the different countries, the same gap between the radiants of the pencil, and it is filled in the same way by the government demand. It enables us to consider the possibility of the government taxing imports or exports but not spending the money at all. In this case one must consider the rentier beneficiaries from the ensuing deflation as being the recipients of the taxation proceeds, and it is the form taken by their additional purchases that determines the effect of the tax.

In inserting a rightangle to represent the government demand, we have been assuming the proportions between government consumption of E and G as given. It is obvious that this is not fixed but will depend upon the relative prices of E and G. Closely bound up with this is the implicit assumption that the shapes of the traders' offer curves (which include the demand for imports) are independent of the taxation and the expenditure by the government. Both of these complications can be dealt with at the same time. The e curve can be stabilised by segregating all the influences which might be considered to affect it and incorporating them in the *government demand curve*. This is in accordance with our procedure of including all demand by beneficiaries from government expenditure in the government demand.

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[1] This can be demonstrated with the help of fig. 2. Suppose the g curve to turn down (since it must be inelastic, otherwise it is impossible for the proportion of the tax spent on E (which < 1) to be equal to the elasticity) and to pass through C and U. Draw a straight line through C and U, meeting the G axis in M and the E axis in N, and continue UT to meet OG in L. (This construction is not shown in the figure.) Then the elasticity of the offer curve (*cf.* Lerner, "Elasticity of Demand," *Review of Economic Studies*, Oct., 1933, p. 44, and p. 40, fig. 5) is $\frac{LO}{MO} = \frac{TB}{CB}$ which is the proportion of the tax, measured in G which is spent on E. In this case U, the English traders' equilibrium, will be at the point of intersection of the offer curves so that they do just the same trade as in the absence of the tax—the whole of the tax burden falls on the foreigner. If, however, the proportion of the tax spent on E were greater than this, the price of E would rise relatively to that of G, the pencil would swing round to the left, and U would move to a point on e further from the origin, indicating that the English traders buy more G and on better terms. The foreigner pays more than the whole of the tax.

The government demand curve is the curve SC in fig. 6, which is a kind of small replica of the e curve, something like the embryo orange that one finds in a Jaffa. US is the size of the tax measured in E. At the price Rg—which is the price at which the government can convert E into G—it moves the top end of the rightangle from S to C. Instead of inserting a rightangle we have to insert the wedge CSU, moving U down the e curve, SU meanwhile contracting so as to measure the same size of pencil, until the radiant (from the origin) passing through S meets the government demand curve just at the point where it cuts the g curve.

This is not quite satisfactory in so far as it implies that the shape of SC is independent of the size of the tax collected. An improvement on this is to consider there to be a series of SC curves, more or less parallel to each other and starting from different points on US and US continued. Each of these curves shows the government demand curve corresponding to the size of the tax, measured in E, as indicated by the distance of the bottom of the curve from U along US. This series of curves is then moved down in the same way until the curve which begins at the point along US corresponding to the size of the tax is in a line with the origin and with the point where it cuts the g curve. The line through these points is Rg and this gives the equilibrium position as shown in fig. 6, the government consuming CT of G and TU of E.

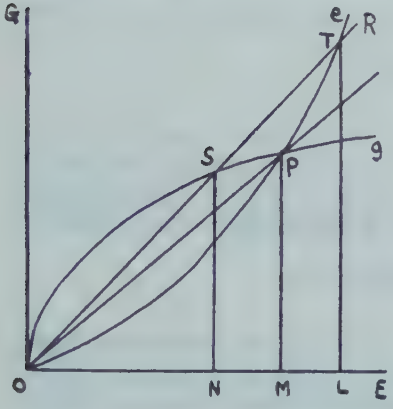

Fig. 1.

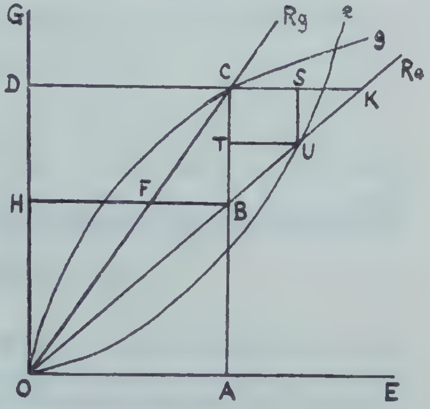

Fig. 2.

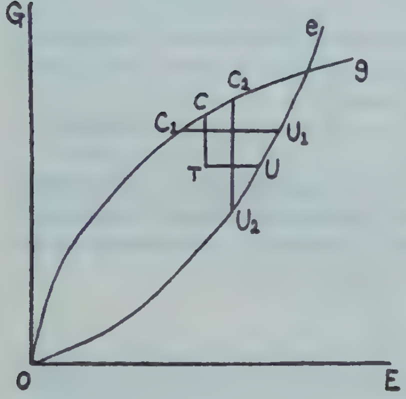

Fig. 3.

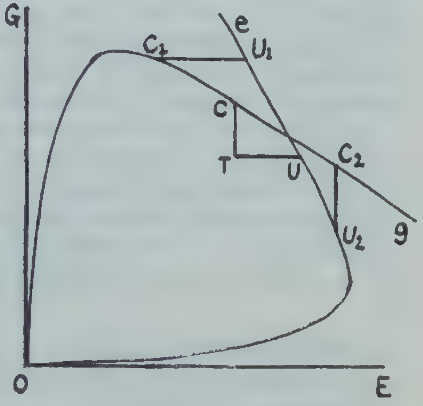

Fig. 4.

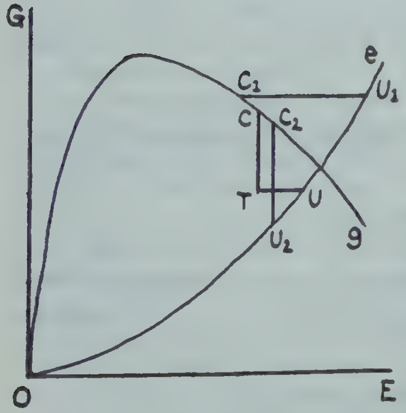

Fig. 5.

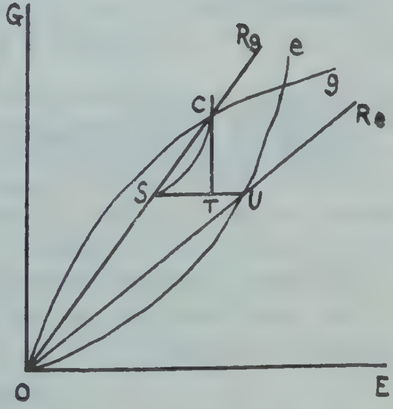

Fig. 6.

Elements of Capital Theory: A Note

By Victor Edelberg

In his celebrated work, *The Nature of Capital and Income*, 1906 (pp. 176, 2, 145, 43, 384, 390, 403–11), Irving Fisher combats popular confusions about the atomic and molecular concepts out of which every theory of capital has to be constructed.

But Fisher is not explicit enough, and the confused ideas remain popular.

To revise them would be a useful preliminary to any advance in the theory. Because we cannot think accurately with vague and vascillating concepts (" inadequate ideas ").

My aim is clear and distinct ideas. It is to crystallize the elementary concepts of the theory of capital.

I do not enter into a discussion of " time-preference." But I add a suggestion how Fisher's celebrated doctrine of the " investment opportunity " may be developed and become the foundation stone of the whole theory of production for the market.

* * * *

Goods are material objects.

A " concrete good " $\bar{G}$ (a house) has a small duration δt it takes to observe or to think of.

A " good " G (at an instant) is the concrete good with its duration δt abstracted, is

$$G = \frac{\bar{G}}{\delta t} \tag{1}$$

of dimension $G = \bar{G} \,.\, t^{-1}$.

Writing $G(t)$ for the quantity of a good at t, the service of the good during an interval (a, b) is

$$\int_a^b G(t)dt, \tag{2}$$

or the existence of the good through time, and is of dimension $G.t = \bar{G}$.

The good $G(t)$ is the rate of service from it at t. The concrete good $\bar{G}$ is a service

$$\int_a^{a+\delta t} G(t)dt$$

during a short interval δt. A " durable good " is really a service

$$\int_a^b G(t)dt$$

where (a, b) is its life. For the above reasons, a service, a good and a concrete good are concepts difficult to keep apart, and are easily confounded.

A consumer's effective income of a service in an interval (a, b)

$$\int_a^b g(t)dt \tag{3}$$

is the amount of service acting directly on his body (at a rate $g(t)$) during the interval. It is the quantum of action of the good $G(t)$ on the consumer over time, i.e. action of a hair dresser, of a house, of clothes, etc. I write $g(t)$ for the rate of the effective service in order to distinguish it from the rate of service as such $G(t)$ which includes both effective and ineffective parts. An ineffective service is one which does not directly act on the consumer's body, as the service of his house when the consumer is not at home. Hence $g(t) = G(t)$ when the service is effective and $= 0$ when the service is ineffective.

Writing ξ as the index of the kind of a good (including its position in space but not in time), ξ is the index of the kind of the corresponding service, and the consumer's total income of effective services in an interval (a, b) is

$$\underset{\xi=a}{\overset{\xi=\omega}{S}} \int_a^b g_\xi(t)dt \tag{4}$$

a set of services from kind a to kind ω. It expresses the total action on the consumer in a time interval, i.e. describes his immediate material environment over time.

The form of the function $g(t)$, which is a function with respect to the index ξ as well as with respect to time t, describes the " time-shape " of the income (4), e.g. that the consumer has his soup before his sweet and not after.

The processes in the consumer's body are services. In an interval (a, b) where $b > a$, these processes are determined by the state of the consumer's body at a and by his service income (4), the environment. The body and its environment interact.

The processes in the body cause the consumer's mental states. E.g. light strikes the eye's crystal, is focussed on the retina, a nerve-message is sent to the brain, and something is seen—a perception occurs.

This is consistent with reasonable solipsism.

Psychic income in an interval (a, b) is the succession of the states of the conscious $C(t)$ in the interval.

Putting a, b as the dates of birth and death, " Psychic income is one's whole conscious life" (Fisher). It consists of perceptions of external objects, of emotions, of thoughts, etc.

Consumption is the process consisting of psychic income and of its relatively immediate causal antecedents: the body and its service income (4).

Roughly speaking, the immediate causes of a state of the conscious $C(t)$ at t is a constellation extant a short interval δt before and consisting of the state of mind $C(t-\delta t)$, the state of the body and the goods (service rates) "acting" on the body, at $t-\delta t$.

Consumption consists of the effective service income, the body's behaviour and the psychic income.

One cannot observe the psyche of another. And observation of another's effective service income is either fragmentary or non-existent. His consumption, especially his psychic income, is inferred by analogy with our own. It is usually inferred from knowledge of his character and the goods which are liable to act on him in a time-interval. Such goods are his house, his wardrobe, his servants, his family, and his meals, etc.—the so-called "consumption goods."

His body is a consumption good, with respect to himself and with respect to some others.

Goods which are liable to act do so now and then. They yield an effective service income (3) only when they act. The services of consumption goods imply nothing about the effective income from them, except that the effective income is not greater than the services

$$\int_a^b g(t)dt \overset{=}{<} \int_a^b Gt(dt)$$

They limit the field of the possible effective incomes.

The total income of services of consumption goods of all kinds, including both effective and ineffective services, in an interval (a, b) is

$$\mathop{S}_{\xi=a}^{\xi=\omega} \int_a^b G_\xi(t)dt \tag{5}$$

or the set of services of consumption goods from kind a to kind ω.

Given A's character and his probable services (5) of his consumption goods, I infer a certain field of his probable consumption by imagining myself in his shoes. If his character is unknown and only the service income is given, the field is wider. If, as usual, the space indices of goods are neglected and goods differing only in their position in space are regarded as being of the same kind, then the field is wider still.

Henceforward I neglect space indices in the definitions of goods and services.

For each service income (5) there corresponds a particular field of consumption. The income is an index of the field of consumption.

And is vague, because one value of the index indicates several consumptions at once. This index of consumption is constantly mixed up with quite another index which is called the "income of consumption goods."

An income of a consumption good at an instant t

$$d_i\,G(t)$$

is a new increment added to the consumer's stock at t. It is usually a very discontinuous function of time: one buys cigarettes at intervals and a house once in many years.

The income of the good in an interval (a, b) is

$$\int_a^b d_i\,G(t). \tag{6}$$

The outgo of the good at t

$$d_o\,G(t)$$

is the quantity of the good which disappears from the consumer's stock at t, is used up or parted with by gift or sale, etc. The good outgo during (a, b) is

$$\int_a^b d_o\,G(t),$$

and the net income of the good is

$$\int_a^b \Big[d_i\,G(t) - d_o\,G(t)\Big] \tag{7}$$

Writing $G(a)$ as the consumer's stock of the good at a, the stock at $t = T$ is

$$G(T) = G(a) + \int_a^T \Big[d_i\,G(t) - d_o\,G(t)\Big]$$

and the service income during (a, b) is

$$\int_a^b \Big\{G(a) + \int_a^T \Big[d_i\,G(t) - d_o\,G(t)\Big]\Big\}dT \tag{8}$$

is a function of $G(a)$ and is a *functional* with respect to the functions $d_i\,G(t)$ and $d_o\,G(t)$,

$$F\Big[G(a)\,;\; d_i\,G(t),\, d_o\,G(t)\Big]. \tag{8'}$$

Only a part of the service income (8) is effective.

Evidently, in the interval (a, b) the outgo function $d_o\,G(t)$ depends on the initial stock $G(a)$ and on the income function $d_i\,G(t)$,

$$d_o\,G(t) = M\Big[G(a),\; d_i\,G(t)\Big],$$

and the mode of dependence M is determined by the way the good is used and in particular by its durability.

The income of service (8) is of dimension $G\,.\,t$ and is qualitatively different from the income of the good (6) of dimension G.

Nor is the good income an index of the service income. Knowledge of the good income (6) tells us nothing about the income of service (8) because from (8′) this depends also on the initial stock $G(a)$ and on the outgo function $d_o\,G(t)$.

To determine (8) we have to know $G(a)$, $d_i\,G(t)$, the form of F and either $d_o\,G(t)$ or the operator M.

The good income (6) is often confounded with the service income (8). Thus if in a year one buys a house for £1,000 this is called a £1,000 worth of "house income." If instead one rents the house for £100 during the year this is called a £100 worth of "house income," and the annual income of houses is confounded with the annual income of housing. Similarly if the house is rented and cigarettes are bought, the service of the house and the income of cigarettes are classed under the same heading "real income," although the two belong to quite different categories: the service housing has a time dimension which the goods cigarettes have not got. The good income (6) can also be mistaken for the effective service income (3).

The income of consumption goods of all kinds in an interval (a, b) is

$$\underset{\xi=a}{\overset{\xi=\omega}{S}} \int_a^b d_i \underset{\xi}{G}(t) \qquad (9)$$

and by itself tells nothing about consumption (the effective service income, body behaviour, and psychic income).

But in the light of my circumstantial knowledge, for each income of consumption goods (or even its money value) there corresponds a certain field of probable consumption.

The price $p(t)$ of a good is the quantity of money $\delta £$ paid at t per unit good δG

$$p(t) = \frac{\delta £}{\delta G}$$

of dimension $£.G^{-1}$ where £ is the dimension of money.

Rent $r(t)$ is the quantity of money $\delta £$ paid per unit service $\delta G.\delta t$, where δG is unit good and δt is unit time,

$$r(t) = \frac{\delta £}{\delta G.\delta t}$$

of dimension $£.G^{-1}.\,t^{-1}$

The dimensions of price and rent are different; rent has a t^{-1} dimension which price has not got. Example of price: price of bread, example of rent: house rent, land rent, time—wage rate.

The money value of the income of consumption goods (8) bought in the interval (a, b) is

$$I_g = \sum_{\xi = a}^{\xi = \omega} \int_a^b p_\xi(t) \, . \, d_i \, G_\xi(t).$$

In the case of goods not bought—home made goods, gifts, etc., $p_\xi(t) = 0$.

The money value of the rented service income (5) is

$$I_s = \sum_{\xi = a}^{\xi = \omega} \int_a^b r_\xi(t) \, . \, G_\xi(t) dt.$$

In the case of unrented services $r_\xi(t) = 0$.

The money value of the income of goods and services purchased in the interval (a, b) is

$$I = I_g + I_s \qquad (10)$$

of dimension £, is a popular concept and confounds goods and services.

By a popular convention it excludes negative items which are due to negative rents being paid for certain services. An example of a negative rent is the wage paid to the consumer. His wage is a negative rent which he pays for the services of his "working conditions." As Adam Smith knew, working conditions are a case of consumption goods. Conversely, consumption goods are also intermediate products—are causes of future consumption goods and psychic incomes. I.e. consumption goods have an intermediateness aspect, viz. working conditions which contribute to future consumption or the food which keeps a cultivator fit and enables him to produce consumption goods in the future.

The value income (10) can be extended to include the hypothetical value of the income of goods and services not paid for, by using hypothetical prices and rents. E.g. an estimate of the value of one year's service of the consumer's own house is the market rental for a similar house. (But problems of "double counting" arise.)

Whether a good is bought or its services are rented is decided by convenience. Some durable goods (houses, land) are rented. Services of perishable goods are not rented. Some perishables are bought.

There are many theoretical objections to the concept of the value of the consumer's purchased income of goods and services (10). It confounds goods and services, and tells us almost nothing about consumption.

But it has its uses.

It helps to explain the value of business capital.

Production is the process consisting of psychic incomes and all their casual antecedents, back to factors outside human influence, e.g. climate. It includes consumption. And machines, minerals, science and arts, etc. It is conduct (interaction of mind and matter). Production is the evolution of the world economy.

Let $t = \tau$ be the present.

Capital is any collection of goods at an instant.

A business owns a capital $c(\tau)$ e.g. land, buildings, plant, materials, etc., in the present.

To bring out essentials I assume perfect foresight.

Capital $c(\tau)$ is more or less indirectly a part-cause of future goods to be sold to consumers and future services that will be rented to consumers. It is a condition of their future value incomes (10) in the interval (τ, ∞).

Let $\psi(t,\tau)$ be the rate of flow at t of consumers' incomes (10) somehow imputed or due to the capital $c(\tau)$.

The past has happened and cannot be changed by anything existing in the present, and

$$\text{for } t < \tau,\ \psi(t,\tau) = 0. \qquad (11)$$

If $f(t)$ is any quantity growing with time, the rate of interest is the proportionate rate of growth

$$\rho = \frac{f'(t)}{f(t)},$$

of dimension t^{-1}.

If the growing quantity is an invested sum of money, ρ is the money rate of interest.

For simplicity ρ will be taken constant with respect to time. This implies that the function $f(t)$ is an exponential, i.e. that

$$f(\tau) = f(t)\, e^{-\rho(t-\tau)},$$

where $f(\tau)$ is the present or " discounted " value of the sum of money $f(t)$.

The present money value of capital $c(\tau)$ is

$$x(\tau) = \int_{\tau}^{\infty} \psi(t, \tau)\, e^{-\rho \cdot (t-\tau)}\, dt \qquad (12)$$

(which is finite assuming $\psi < \infty$ and $\rho > 0$) and is the discounted value of the future goods and services sold or rented to consumers, due to the capital $c(\tau)$.

For example ψ is the annual rate of revenue of rentals less cost of repairs of a block of flats. Then (12) gives the present value of the block.

The value of the national business capital at τ is

$$\Sigma\, x(\tau),$$

the summation extending over all the businesses of the country.

Writing $d\,\Sigma\, I/dt$ as the rate of expenditure in a country on consumption (in the narrow sense), Adam Smith's rate of national " net revenue " is

$$\frac{d\,\Sigma\, I}{d\,\tau} + \frac{d\,\Sigma\, x(\tau)}{d\,\tau}$$

and is the rate of expenditure on " consumption " plus the rate of increase in the value of the national business capital, and is a popular concept. It is sometimes extended to include changes in the value of the national stock of consumption goods such as dwellings, owned by consumers.

In *The Rate of Interest*, 1907, and *The Theory of Interest* 1930, pp. 151, 175, 169–70), Fisher explains how the function $\psi(t, \tau)$ is determined. His explanation is incomplete.

It amounts to this. To an entrepreneur planning at $t = \tau$, τ is given, is a constant and can be called " zero hour " and for elegance put $= 0$, and the function $\psi(t, \tau)$ can be written simply as $\psi(t)$. By varying the methods of production, the stream function $\psi(t)$ is varied within a certain field $[\psi(t)]$, and the rate of discount ρ being given, the entrepreneur adopts the stream having the greatest present value, i.e. adopts a stream function $\psi(t)$ of such a time shape that the value of his business x(0), (12) is maximised, i.e. the first variation

$$\delta_{\psi} x = 0. \tag{13}$$

A simple example how streams are compared: a stream with a bigger future distant part, which is heavily discounted, is weighed against a stream having a greater part in the near future which is less heavily discounted (speaking roughly).

The two unknowns $x(0)$ and $\psi(t)$ are determined by two equations (12) and (13).

Fisher's analysis is incomplete because he does not show how the field of variation $[\psi(t)]$ of the function $\psi(t)$ is itself determined.

How is the field $[\psi(t)]$ determined?

I would suggest that *either* assuming complete " vertical integration " of production among firms, *or* redefining $\psi(t)$ quite generally as the rate of a firm's future net revenue of money, and not assuming complete vertical integration, we have

$$\psi(t) = \phi(t) - \omega(t), \tag{14}$$

where $\phi(t)$ is the business' future sales and $\omega(t)$ is the rate of future investment of money into the business. By definition

$$0 = \phi(t) = \omega(t) \text{ for } t < 0.$$

The functions $\phi(t)$ and $\omega(t)$ may be called " the time shape of sales " and " the time shape of investment " respectively.

The present capital $c(0)$ is inherited from the past and is a datum. Given future price-conditions and the entrepreneur's present knowledge of alternative methods, the field of the net-revenue function $[\psi(t)]$ is determined by (14) and by the totality of possible sales and investment functions $\phi(t)$ and $\omega(t)$.

The entrepreneur can spend investment of a given time shape in a good many different ways. I.e. for a given investment function

$\omega(t)$ the sales function $\phi(t)$ can be varied within a certain field $[\phi(t)]$ by varying the methods of production which are consistent with the given investment function $\omega(t)$.

Evidently, sales depend on previous investment, that is the field $[\phi(t)]$ depends on the function $\omega(t)$

$$\Big[\phi(t)\Big] = F\Big[\,\omega(t)\,\Big]. \tag{15}$$

(15) is the crux of the theory of production for the market.

From (13) (14) (15) the present value of capital $x(0)$ is first maximised with respect to the sales function $\phi(t)$

$$\delta_{\phi}\, x = 0 \tag{16}$$

for each given investment function $\omega(t)$, and is afterwards maximised with respect to the latter

$$\delta_{\omega}\, x = 0. \tag{17}$$

I.e. the adopted time shape of sales is the most profitable one possible for the adopted time shape of investment, and the adopted time shape of investment is more profitable than any other, even when that other is imagined to be worked in conjunction with the best time shape of sales that corresponds to it.

(14)–(17) are presupposed by Fisher's (13). They deepen his analysis.

(17) at once yields a generalisation on marginal productivity:

$$\delta_{\omega}\int_{0}^{\infty}\phi(t)\,e^{-\rho t}dt = \delta_{\omega}\int_{0}^{\infty}\omega(t)\,e^{-\rho t}dt,$$

or the present value of the future variation in sales, due to a small variation in the future investment, equals the present value of the variation in the investment.

The traditional equilibrium condition " marginal revenue equals marginal cost " is a special case arising when time taken by production is neglected by putting $t = 0$.

Some New Light on Thomas Joplin

By W. F. Crick and J. E. Wadsworth

In the course of recent research into English banking history some new material has come to light concerning Thomas Joplin, to whom more than anyone else was due the establishment of joint stock banking in England. It revealed that Joplin had been concerned in banking projects in Bradford and Huddersfield, where two of the earliest joint stock banks were founded, as well as in Whitehaven and Workington. In Cumberland, despite Joplin's personal association with Matthias Attwood, who represented the district in Parliament, his efforts did no more than provide the groundwork on which others built; but in Yorkshire his work was more immediately fruitful. The circumstances of establishment of the Bradford Banking Company and the Huddersfield Banking Company are related, and brief references made to Joplin's connection with them, in the writers' *A Hundred Years of Joint Stock Banking*; but students of Joplin's life and work may be interested in actual references to him in minute books, and in some further data brought to light through detailed investigation.

The following extracts are taken from the directors' minutes of the Bradford Banking Company:—

Feb. 8, 1837. Resolved that £2 be subscribed to the fund for defraying the expense of Mr. Joplin's Pamphlet on Banking.

May 3, 1837. Resolved that the *Economist* Weekly Newspaper be ordered.

Sept. 6, 1837. Resolved that the Surplus of Subscription to resisting the alteration of the Stamp Duties may be paid over to assist in promoting the Establishment of the *Economist* newspaper.

Nov. 29, 1837. Resolved that eight copies be ordered of the Newspaper about to be published in the place of the *Economist*, which is discontinued.

Jan. 23, 1839. That instead of eight copies of the *Atlas* Newspaper six copies be ordered.

Nov. 11, 1840. As some remuneration to Mr. Joplin for his assistance in the formation of this Bank and in consideration of the loss which he sustained in conducting the late *Economist* newspaper and of the service which that paper rendered to the interests of Banking Companys, Resolved that a credit be lodged in Mr. Joplin's favor for £50 with Messrs. Jones & Co. and that he be informed he may draw on them for this sum if such a course be acceptable to him.

Jan. 16, 1845. Resolved that six copies of the *Atlas* newspaper be discontinued upon condition that the *Economist* be taken in its place.

The references to periodicals indicate the unprofitableness of Joplin's journalistic projects. They show too that the banks recognised, partially at any rate, the place of Joplin as their self-appointed champion. Joplin's *Economist* was founded, in his own words, "to protect the interests and defend the principles of joint stock banking." It failed, as did its successor, the *Atlas*, and there seems to have been no connection between the first and the second *Economist*, founded in 1843 and still flourishing.

Joplin, like many a pioneer, found it difficult to support himself, and was driven to a variety of expedients to this end. He would not have experienced any difficulty had he possessed the qualities essential for that continuous, co-ordinated effort necessary in the conduct of large-scale business enterprise. Opportunities were presented when, for example, the Provincial Bank of Ireland and the National Provincial Bank were founded. In both of these Joplin was given appointments, but neither was held for more than a year. The bitter circumstances of his departure from the English bank, which came nearest of all to fulfilling his broad conception of a country-wide joint stock bank, have been related by Hartley Withers (*History of the National Provincial Bank*). One of the unhappiest consequences of this personal characteristic was the importunity shown in some of the following extracts from the directors' minutes of the Huddersfield Banking Company:—

Feb. 12, 1827. The provisional committee resolved: "That instructions be laid before Mr. Joplin to draw up a prospectus."

Mar. 9, 1827. Joplin was appointed to the committee set up to establish the bank.

Apr. 3, 1827. Joplin, with others, presented the "heads of the Deed of Settlement."

June 29, 1827. Directors' resolution: "That Mr. Joplin's application to be stockbroker to the company be declined on account of Messrs. Smith Payne and Smith's having refused to guarantee the transactions of any broker but their own, that this be intimated to Mr. Joplin with a request that he make a charge for his trouble and services and transmit same to the Bank."

This entry provides an example of the ingenious means adopted by the private banking and financial fraternity to protect their own preserves. Incidentally, even at that early date the practice of sharing commissions on stock exchange transactions was already established.

Mar. 10, 1833. The directors cannot agree to Mr. Joplin's request to hold any shares on his behalf in his projected National Bank.

The request seems evidently to have related to the provision of capital for the National Provincial Bank.

Sept. 8, 1837. That £20 be sent to Mr. Thomas Joplin.

Oct. 2, 1840. The board took into consideration the application of Mr. Thomas Joplin to be remunerated for the trouble and expense to which he was put in meeting the directors at the time of the formation of the Bank, and resolved to present him with the sum of £100, which was accordingly done.

July 17, 1846. A letter from Mr. Thomas Joplin dated 6th June was laid before the board. Mr. Joplin wishes to obtain a yearly allowance from the English Joint Stock Banks. The board declined to interfere.

Jan. 22, 1847. Two letters were laid before the board, one from Mr. Joplin and the other from his friend Mr. Ince, making application for pecuniary assistance for Mr. Joplin in consideration of the services rendered by him to this bank at its formation and also to the cause of Joint Stock Banking in general. Mr. Joplin's case having received the consideration of the Board of Directors on the 8th September, 1837, who voted to him £20, the present Board do not think themselves called upon to make any further grant of money to Mr. Joplin.

Oct. 20, 1848. Mrs. Joplin applied for some pecuniary grant from the Bank and grounded her application on the services rendered to the Bank by Mr. Joplin at its formation, but several sums having been paid to Mr. Joplin for those services the Board could not entertain the application.

Joplin died in 1847. According to Maberley Phillips, one of the first to concern himself with the details of Joplin's career,[1] death took place " at Böhmischdorf in Silesia," whither he had gone in search of health. Inquiries have established that the place thus referred to is the village of that name near Freiwaldau, where a number of minor health resorts are situated, in the north-east of what is now Czechoslovakia. The death certificate records that death from " abdominal typhus " took place on April 12, 1847. Joplin is described as a " rentier of Gravesend in the County of Kent, England," and as a " Protestant (English High Church)." He was buried in the local graveyard, but no memorial marks the place, for the graveyard has since been converted into a park, and it seems likely that the tombstone was in due time sold to a mason to serve a second turn.

By a piece of good fortune, combined with the courtesy of a priest at Freiwaldau, however, the records have not entirely disappeared, for it was discovered that when the old graveyard was closed someone wrote down the inscriptions on some of the memorials, among them the following (translated) from a tablet on the graveyard wall :—

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[1] Other sources of information are H. D. McLeod : *The Theory and Practice of Banking*, and S. Evelyn Thomas : *The Rise and Growth of Joint Stock Banking*.

> "Sacred to the memory of Thomas Joplin, Esq., native of Newcastle-upon-Tyne, who departed this life on the 12th of April, 1847, aged 57. His end was peace. He hath entered into rest. And his works shall follow him."

The clergyman officiating at Joplin's funeral was "Christoph Barrow, Prediger der englischen Hochkirche in Leamington, Warwickshire." Incidentally, the data here given may help to establish the date of his birth.

Mr. Paine and Rationalisation: A Note

By R. F. Kahn

In the course of his very interesting article on "Rationalisation and the Theory of Excess Capacity" (Economica, February, 1936), Mr. C. L. Paine has occasion to criticise a doctrine of my own. In dealing with the "ideal" output and constitution of an industry subject to purely "irrational" imperfection of competition, I have stated that "the reproduction of the conditions of the average degree of competition [which prevails in industry in general] is what is required."[1] Mr. Paine finds this doctrine a difficult one to swallow, and prefers to "fall back on the common-sense view that if competition would not be imperfect but for the imperfection of knowledge, then the reproduction of the conditions of perfect competition ought to be the objective of any scheme of intervention."[2]

The argument which Mr. Paine criticises is, as he himself points out,[3] best illustrated by imagining a completely symmetrical world in which an equal degree of irrational imperfection of competition prevails in the production of every commodity. Then, by symmetry, the value of the marginal product of each factor of production would be the same in every use, and any diversion of resources would result in a net loss to society. Mr. Paine rejects the argument by an appeal to common sense. But what common sense tells us is that if *all* commodities were produced under conditions of perfect competition the ideal arrangement of resources would be established. Now the very same distribution of resources is established in a world in which an equal degree of imperfection of competition prevails everywhere. It follows that in such a world interference has no part to play. The reproduction in all industries of the conditions of perfect competition would leave the situation just as it was before, so far as concerns the arrangement of resources and the national dividend.

On the other hand, the reproduction in *some* industries *and not in others* of the conditions of perfect competition would result in a mal-diversion of resources, and the national dividend would suffer. The trouble with Mr. Paine's argument is that, associating imperfection of competition with ignorance, he is eager to quell it wherever it may appear. He fails to realise that unless he succeeds in disposing of it on *every* front, he may cause a serious distortion to the horizontal structure of production.

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[1] *Economic Journal*, March, 1935, p. 29.

[2] C. L. Paine, Economica, February, 1936, p. 49.

[3] *Ibid.*, p. 48.

The criterion that I was putting forward was intended to govern the rationalisation of one single industry. If *all* industries were being rationalised the reproduction of the conditions of the average degree of imperfection of competition would be one criterion, the uniform reproduction of the conditions of any other degree of imperfection of competition would be another criterion, which would lead, as a limiting case, to—simplest of all—the uniform reproduction of the conditions of perfect competition. Mr. Paine's criterion would be correct (as also would be mine) if he were applying it to all industries ; it is false analogy to apply it to a single industry.

But that is not the root of the difference between Mr. Paine and myself. The irrationality that I was considering showed itself in the preference of the consumer for the product of one firm over that of another firm in the same *industry*. I was assuming—I might have made it clearer—that as between one " *commodity* " *and another* all preferences were purely rational, so that price could be used as a measure of marginal utility, and the fact that the price is " partly the result of the imperfection of knowledge "[1] need not disturb us. Mr. Paine is, I think, confusing the two types of irrational preferences.[2] He is entitled to claim that the one type cannot exist without the other. But it is impossible to proceed with the analysis except by dealing quite separately with the two types. This Mr. Paine fails to do. If the " imperfect knowledge of consumers " of beer means that they fail to take full account of the havoc wrought on their systems by alcohol, then the " reproduction of conditions of perfect competition " would, according to Mr. Paine's terminology, involve a diminution in the consumption of beer. If, however, the " imperfect knowledge " merely takes the form of each consumer irrationally preferring the product of his own pet brewery to that of others, the " reproduction of conditions of perfect competition " would mean that *more* beer would be consumed. I should agree with Mr. Paine that on the first count the consumption of beer should be discouraged. I should disagree that on the second count the industry should be reorganised in such a way as to increase the consumption of beer—unless, and only to the extent that the degree of irrational imperfection of competition which prevails in the sale of beer exceeds that which prevails in industry in general.

I find it a little curious that Mr. Paine makes no mention of the important qualification to which I myself subjected my conclusion, which, I wrote, is based on the tacit assumption " that the entrepreneur is always capable of making a positive contribution to society's welfare."[3] But if the individual firms " are producing under conditions of falling average cost of hired factors (falling average cost excluding profits) . . . the value of each entrepreneur's marginal physical product, and therefore his marginal social productivity, is negative." Here is an argument for "rationalisation" which, deriving its strength from the absolute, rather than the relative, degree of imperfection of competition ruling in the industry, should make a strong appeal to Mr. Paine's common sense.

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[1] C. L. Paine, ECONOMICA, February, 1936, p. 49.

[2] That this is so is indicated very clearly by a footnote of his (to p. 49 of his article) where he refers to the possibility of competition being perfect in spite of the knowledge of consumers being imperfect.

[3] *Loc. cit.*, p. 32.

In examining a method that I proposed for establishing the ideal constitution of an industry, Mr. Paine is, of course, right[1] that it works (in the case of those industries where it is desirable to *reduce* the number of entrepreneurs) by imposing losses on the entrepreneurs until their number has been reduced to the ideal number. That is exactly how it does work. I am unable to follow Mr. Paine's inference that during the period of transition it would *not* be possible, as I suggested, to treat each industry as a self-contained unit, imposing on it a lump-sum tax balanced by an equal subsidy. While I have no desire to make it appear that my suggestion was to be regarded as more than academic, I should point out that my method offers one advantage over Mr. Paine's (the fixing of maximum prices), in that it not only drives entrepreneurs *out* of those industries where they are too numerous but in addition actively draws them *in* to those industries where their number is deficient, while Mr. Paine has to leave the entrepreneurs who are driven out of the one set of industries to *force* their way into the other set.

One final point. I entirely agree with Mr. Paine, and with Professor Plant, that "the use of the term 'excess capacity' in this connection is not particularly fortunate."[2] But why does Mr. Paine lend the weight of his authority to this nomenclature by calling his article "Rationalisation and the Theory of Excess Capacity"? It is this confusion which seems to be responsible for a curious point of view adopted by Dr. Benham in the same number of ECONOMICA,[3] in the course of his review of Professor Pigou's *Economics of Stationary States*. Dr. Benham attacks the "recent doctrine that when an industry is under monopolistic competition, 'centres of production' will be of less than optimum size." Now it is clearly true that "excess capacity in the obvious sense . . is a short-term phenomenon :" "presumably each entrepreneur will have a plant suited to whatever output he finds most profitable." But "excess capacity in the obvious sense" has nothing whatever to do with long-period falling costs. It is true that Dr. Benham excludes from his objection the case where "larger plants would give a more than proportionate gain in efficiency." If such exclusion is accepted, *cadit quaestio*. The whole point of the "recent doctrine" is that in practice larger plants *do* "give a more than proportionate gain in efficiency" (proportionate to what ?).

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[1] *Loc. cit.*, p. 58.

[2] *Loc. cit.*, p. 46, note.

[3] February, 1936, p. 92.

A Rejoinder to Mr. Kahn

By C. L. Paine

Mr. Kahn's reply to my criticisms appears to fall into four parts. In the first place Mr. Kahn suggests that in a world where knowledge is " equally imperfect all round," to increase knowledge only in one direction, or to reproduce artificially the conditions which would prevail if knowledge were perfect *in one field only*, would cause a maldistribution of resources. Secondly he accuses me of confusing imperfect knowledge which results in consumers erroneously believing the various brands of the " same " product to be different, with imperfect knowledge which results in their having " irrational " preferences[1] between entirely different commodities. Thirdly he takes me to task for omitting to mention certain exceptions which he himself admits to his conclusions. Finally Mr. Kahn objects to certain minor criticisms which I made of his method of eliminating " excess capacity." I shall endeavour to take up each of these points in turn.

Mr. Kahn's first criticism seems to me to be based on an assumption that if the conditions of perfect competition are reproduced in an imperfectly competitive " industry," *entry into which is unrestricted*, the quantity of factors employed in that industry will increase. But clearly this is not always so. If for example the average cost of the hired factors is falling, then by grouping the factors in productive units of the optimal rather than a sub-optimal size, we can obtain a larger output without diverting any factors from alternative uses. In this case there is everything to be gained by treating each " industry " separately. When the services supplied by the entrepreneur can be varied in amount with output, there ceases to be any relevant distinction between him and the hired factors, and this case becomes all inclusive.[2] For it is now possible to speak of the marginal product of entrepreneurship without implying a change in the number of firms.

We are now left with the case where the services of the entrepreneur cannot be varied in amount, and where, in spite of the fact that the average cost of the hired factors is constant or increasing, total average costs are falling because the fixed cost of the entrepreneur is spread over a larger output. In this case it is important to include in the entrepreneurial function only such services as are exclusively referable to the fact that the firm exists *as a separate entity*. If the entrepreneur supplies services which could be performed by a salaried manager, then these must be regarded as services supplied by a hired factor, just as if the entrepreneur happens to own the fixed plant this cannot be included as part of the entrepreneurial function. We cannot here enter into a discussion of what services are exclusively referable to the fact that the firm exists as a separate entity, but it should be pointed out that until Mr. Kahn supplies us with a satisfactory definition of the "entrepreneur," his analysis must lack precision.

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[1] I prefer to use the term " imperfect knowledge," since the " irrational preference " seems to imply an element of judgment on consumers' preferences which is not necessarily associated with this kind of analysis at all.

[2] In all fairness to Mr. Kahn it should be pointed out that this is one of the cases he himself excepts from the general case (*Economic Journal*, March, 1935, p. 32). One thing, however, which he does not appear to have seen, is that, where the entrepreneur is divisible, this " exception " comprises the whole of the " general case."

Where the average cost of the "hired factors" is constant, but average total cost is still falling, it would be possible to produce the existing output with the same quantity of "hired factors," but with fewer "entrepreneurs." If the entrepreneurs can be used in alternative capacities this is clearly important, and there is still a gain from treating each industry separately.

The case of rising average cost of the hired factors is rather more complicated. If the factors are combined in production units such that average total cost is minimised, although entrepreneurs will be set free, in order to maintain output it will be necessary to increase the quantities of hired factors employed. Nevertheless, if the entrepreneur can be used as a hired factor, it will be possible to maintain output in the "rationalised industry" so long as the value of the marginal product as a hired factor is as great as his marginal product as an entrepreneur.

We have thus seen that there is only one case where a combination of the factors into units of the "optimal" size[1] would lead to an increase in the quantity of factors employed in the "industry." This is where

(*a*) the entrepreneur's services are fixed in amount irrespective of output;

and

(*b*) the average cost of the hired factors is increasing, but average total costs are falling because the fixed cost of the entrepreneur is spread over a larger output;

and

(*c*) either the entrepreneur can serve no useful purpose except as an entrepreneur, or the value of his marginal product is less as a hired factor than as an entrepreneur.

This case seems to me to be unimportant except where the cost of the entrepreneur is a very large item in total costs. Yet surprisingly enough it is this case, only without condition (*a*), which Mr. Kahn treats as the general case, the other cases which we considered above being treated as exceptions to the general rule.

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[1] It will be noticed that I have refrained from using the term "reproduction of the conditions of perfect competition," for a reason which will become apparent later.

In this case Mr. Kahn would argue, if I understand him rightly, that in order to maintain output in the rationalised industry, it would be necessary to increase the quantities of hired factors. Against this we must set the value of the marginal product of the entrepreneur in alternative lines. But, Mr. Kahn would argue, since competition is "equally imperfect all round," the marginal products of the entrepreneurs were in the pre-intervention situation equal all round. It follows therefore that the increase in the quantities of the hired factors in the rationalised industry, coupled with the decrease in the number of entrepreneurs, will raise the marginal products of entrepreneurs here above their marginal products in industry in general.

But does this proposition follow? The answer to this question appears to depend on exactly what we mean by competition being "equally imperfect all round." The only meaning that I can attach to this term is that, *in the equilibrium situation*, the elasticity of the individual demand curve of every firm in the economic system is the same. But it by no means follows from this that the marginal product of the entrepreneur will be equal in all lines, even if each firm is driven to the point where its average cost curve is tangential to its demand curve. For the marginal product of the entrepreneur will depend on the slope of the average cost curve *of the hired factors*, and though this depends partly on the slope of the average total cost curve, it is also dependent on how large a proportion of total costs is taken up by the fixed cost of the entrepreneur. It would be possible therefore for the slope of the average cost curve to be the same for all firms, and yet for the marginal product of the entrepreneur to be negative in one line, where his fixed cost is small, to be zero in another line, and to be positive in yet another line where his fixed cost is a relatively large item in total cost. I should agree therefore with Mr. Kahn that in this sub-case the objective of intervention ought to be the equalisation of the marginal products of entrepreneurs as between the different "industries," but I should deny that this necessarily has anything to do with the reproduction of the conditions of "the average degree of imperfection of competition."

Before leaving this subject we must mention one further point. If the elasticity of demand for the product of the rationalised "industry" is greater than unity, then, even if the average cost of the hired factors is falling, the reproduction of the conditions of perfect competition would result in an increase in the quantities of factors employed there. For ex hypothesis the total amount spent on the product of the "industry" is greater at the lower price, and if total receipts just equal total costs both before and after the intervention, it follows that the total money expenditure on factors is greater in the post-intervention situation. But this would happen even if perfect competition were reproduced all round, for when all commodities become cheaper in terms of effort there is a transfer of factors from products in inelastic demand to products in elastic demand. It is true that the elasticity of demand for one " product " will be greater if the prices of all other " products " remain unchanged than if other prices also fall. To this extent there will be too many factors in a rationalised industry, and this will be true whether the industry is faced with an elastic or an inelastic demand, i.e. whether the intervention results in an increase or a decrease in the quantity of factors employed there. But I should again like to point out that this has nothing to do with " the average degree of imperfection of competition." Nor is it an objection against the reproduction of the conditions of perfect competition, that the hired factors will be paid the full value of their marginal products in the rationalised industry, while in other lines they will receive less than this according to the degree of imperfection of competition. For this inequality of marginal net products arises solely because the factors are combined in " sub-optimal " units in other lines. If perfect competition were reproduced all round this inequality would disappear *without involving any transfer of resources from the first industry to the others* except such as is accounted for in the first part of this paragraph.

We now come to Mr. Kahn's second point, which he rightly regards as the main difference between us. I had objected to this whole method of analysis on the ground that the values of the marginal products with which we have been dealing are devoid of any social significance since they are " partly the result of the imperfection of knowledge." Mr Kahn accuses me of confusing two kinds of imperfection of knowledge ; one where the consumer erroneously believes two identical brands of the " same " product to be different, and one where the imperfection takes the form of an irrational preference as between one class of products and another class. Consumers may, as Mr. Kahn points out, " fail to take account of the havoc wrought on their systems by alcohol," without necessarily preferring the product of their " own pet brewery " to that of others. But can the second and relevant form of imperfect knowledge exist without the first ? If the consumer erroneously believes a product X_a, a brand of the commodity X, to be better than X_b, another brand of the same product, can it be said that as between the Xs in general, and some second commodity Y, his preferences are perfectly rational ? It seems to me that the rate at which he is willing to exchange X_a for Y, and the rate at which he is willing to exchange X_b for Y, cannot *both* be the same as if his knowledge were perfect. Mr. Kahn asserts that " it is impossible to proceed with analysis except by dealing quite separately with the two types." But to me it seems indefensible to proceed with analysis by assuming that the two can be separated, when it is impossible to frame assumptions, however unrealistic, where this would be true.[1]

One last point remains to be considered, and that is the exact method by which the " excess capacity " is to be eliminated. I had suggested that under Mr. Kahn's method it would be impossible, during the transition period, to make the tax and subsidy balance each other exactly for every firm. I must apologise for the fact that my argument here was too abbreviated to be comprehensible. The argument runs more fully as follows. Given any lump-sum tax and subsidy there is only one output at which the total subsidy just equals the tax. Mr. Kahn's idea was, presumably, to arrange the tax-subsidies during the transition period in such a way that this was the output which each entrepreneur found it most profitable, or rather, least unprofitable, to produce. But the losses inflicted by the scheme would result in an exodus of producers from this field, and, almost certainly, in a change in the output which it pays each firm to produce. This change must disturb the balance between the tax and the total subsidy. In order to make the two equal again it would be necessary to change their amounts. But this would involve a further change in the number of producers, which would again upset the balance. It follows, therefore, that if in the final equilibrium the tax is to be equal to the total subsidy, it would be impossible during the transition period to make the two equal.

In conclusion I should like to point out that my method could be adapted so as to draw entrepreneurs into those lines where their number is deficient, simply by fixing *minimum* prices instead of the maximum prices which would be the remedy for an excess of entrepreneurs. Mr. Kahn's method is in fact a rather complicated way of fixing prices.

[1] One difficulty which would result from Mr. Kahn's procedure arises where, as a result of imperfection of knowledge, two brands of the " same " product are sold at different prices—Which price is to be regarded as the " measure of marginal utility ? "

Book Reviews

Aspects of the Theory of International Capital Movements. By Carl Iversen. London, Milford. 1935. 536 pp.

This book is divided into two parts. The first, which represents about a third of the whole, is occupied with a very general discussion of international capital movements, their motives, causes and effects. The analysis is based on the work of Professor Ohlin, but takes account of the suggestions of many other writers. It provides an excellent introduction to the whole subject, but it is necessarily somewhat discursive and somewhat incomplete. Although there are many points here which are worth discussion, I find myself compelled by limitations of space to restrict my comments to the more compact argument of the second part.

The subject matter of this larger part is the " Mechanism " of international capital movements, this term being used to cover both the necessary price and income changes in connexion with a capital transfer and the accompanying monetary readjustments. The author's own views are summarised in a Conclusion of some seventy pages, following two lengthier sections, one tracing the history of thought in this matter, and the other reviewing the results of the inductive studies which have been undertaken, chiefly by members of the Harvard School. (I must mention that the contributions of Bresciani-Turroni in this field are overlooked.)

The " modern " view which Dr. Iversen upholds against the " classical " (Mill-Taussig) view can be summarised, I think, in three main propositions, as follows :—

(1) The capital transfer involves directly a redistribution of buying power, so that it is not the case that the lending country, in order to make the real transfer, must expand its sales in a stationary market. With the new distribution of buying power, the relation between imports and exports is naturally changed ;

(2) Secondly, in a sense in qualification of proposition 1, it is recognised that the existence of transport costs and other obstacles to the international movement of commodities is likely to impede the automatic adjustment of trade to the changed distribution of buying power ;

(3) Finally, it is emphasised that *within* either of the countries concerned, the changed distribution of buying power is likely to cause divergent price movements. These internal price changes will not be merely temporary, because, contrary to the classical assumption,

different commodities are produced by different combinations of factors, and the relative scarcities of these factors will be changed.

I am inclined to think that Dr. Iversen devotes too much of his space to arguing the first of these propositions. Nowadays, I imagine, most economists would be ready to agree that the redistribution of buying power must make an important difference, once the process of transfer is started. But some see difficulties in bringing about the start, in getting to the stage at which there is an effective redistribution of buying power. For the rest, the question of interest is whether anything further can be said about the changes in price and income relations, given the fact of the primary shift in buying power.

On the former point, Dr. Iversen appears to argue that the redistribution of buying power requires to be brought about by a monetary transfer, a redistribution in the supply of means of payment. In his view this comes about through gold movements, possibly supplemented by internal credit changes, and by " equalising short-term capital movements." The latter term is not very fortunate. In itself, the equalising or reverse short-term capital movement may help by making the process of transition more gradual, but it does not constitute part of the transfer process. What Dr. Iversen has in mind here is the creation of money (deposits or notes) by the banks in the borrowing country on the basis of balances acquired in the lending country, accompanied perhaps by a withdrawal of the balances in the lending country from active circulation. Dr. Iversen clearly thinks that this mechanism can work perfectly well in the absence of fixed exchange rates—a point which seems to me doubtful.

I also doubt whether Dr. Iversen is right in thinking that the redistribution of buying power must be *preceded* by a redistribution of means of payment. On this point I find myself in agreement with Nurkse's demonstration that the change in buying power, expressed though it is in money, comes about as a direct consequence of the loan and independently of a redistribution of means of payment ; although, in opposition to Nurkse, I think that the change in buying power usually needs to be *accompanied* by a change in the supply of means of payment, if the increased demand for money balances is not to interfere with the transfer process. Robertson has also shown that after the transfer has been completed, the country importing capital may require enlarged supplies of money. My difference from Dr. Iversen may seem rather unimportant, but it leads me to attach less importance than he does to White's theory of oscillatory, or to and fro, gold movements. To avoid misunderstanding, I should say that Dr. Iversen's view appears to me to be perfectly correct when applied to the special case of reparations payments.

On the question of the probable changes in prices and incomes, granted the transfer of buying power, much light is thrown by propositions 2 and 3, above. But here I am bound to say that Dr. Iversen hardly makes the most constructive use of his own ideas.

Too much attention, it seems to me, is given to the negative task of rebutting the " classical " view, and in developing the " modern " view too much emphasis is placed on the difficulty of making any prediction about a system of which all the parts are interdependent.

It is particularly to be regretted that more use is not made of the distinction between the necessity for a relative change in incomes over and above the primary change in buying power, *i.e.*, a change in respect of the levels of incomes earned in production, and the necessity for a change in the commodity terms of trade. This distinction is clearly recognised by Dr. Iversen. A change in incomes earned in production means a change in money costs in general and in purely domestic prices. But it need not mean a corresponding change in export prices, because these are affected by changes in foreign demands. If the export goods are produced mainly for export and require the use of factors peculiar to the export industries, the divergence between the movements of domestic prices and export prices may be considerable. (See proposition 3 above.) Hence the commodity terms of trade need not move with the change in the relation of general cost structures. All this is explained by Dr. Iversen. But instead of following up this distinction by considering separately what can be said about the relations of income structures as well as about the relative prices of imports and exports, he tends to confine his attention to the latter.

I consider this regrettable, in the first place, because whilst it is difficult or impossible to make any prediction about the movements of the terms of trade, it is possible to say something about the way in which income relations are likely to be affected. As is shown more explicitly by Nurkse, the fact that the redistribution of buying power is likely to affect the demand in each country for purely domestic goods, means that the balance of probabilities is in favour of an increased demand for the factors of the receiving country and a diminished demand for the factors of the paying country. (Hence the importance of proposition 2 above.) There is also Robertson's argument to the effect that in each country home products have more the " character of money " than foreign products. Dr. Iversen cites this with approval, but treats it as an argument bearing on the question of the determination of the commodity terms of trade. I suggest that this is a mistake. Although the argument has been presented by means of abstract examples in which each country has only one product, the special character attributed to the demand for home products appears to me to be based on their *diversity*. Moreover many of the home products will be purely domestic goods which cannot be exported. It would follow then that the fact to which Robertson appeals is really one relating to the demand for the services of home factors as compared with that for the services of foreign factors, rather than one relating to the demands for particular kinds of home and foreign products. To say that demands will be shifted in favour of the factors of a particular country is, of course, the same as to say that there will be a relative rise in the level of factor incomes in that country. These *a priori* arguments seem to find considerable support in the evidence reviewed by Dr. Iversen.

A preoccupation with the question of the commodity terms of trade might, however, be justified if this were obviously the more important issue. But this is surely not the case. For the purpose for which it was originally used, the measurement of the gain from trade, the terms of trade concept depended for its value on the assumption that a unit of exports had a constant significance for the producing country. Once this assumption is discarded, as I think it must be, the terms of trade alone mean very little; certainly less in this connexion than the relation between import prices and the size of home incomes. On the other hand, the question what general income adjustments are likely to be necessary, given fixed exchange rates, is a question of the greatest practical importance under modern conditions.

But I do not wish to end on a note of criticism. I may point out that my complaints relate mainly to matters of emphasis rather than of analysis, and I hope that the length of this review will be regarded as a testimony to the importance of Dr. Iversen's work.

BARRETT WHALE.

Parliamentary Taxes on Personal Property 1290 to 1334. A Study in Mediæval English Financial Administration. By JAMES FIELD WILLARD. The Mediæval Academy of America, Cambridge, Mass. 1934. xii + 357 pp. $8.00.

This book is perhaps the most important study in English administrative history which has appeared since the completion of Professor Tout's great work and it is a melancholy demonstration of the loss which learning has suffered through Professor Willard's untimely death. It is in effect a reconstruction of the entire method by which taxes on personal property were granted, assessed, collected and accounted for at the Exchequer during a particularly important period; and only those who know from experience the difficulty and tedium of work upon some of the sources which have had to be minutely examined for it, can appreciate the labour which has gone to the presentation of this singularly exhaustive and lucid account.

These taxes on 'moveable goods', as contemporaries described them, originated in certain tithes for a crusade in the reign of Henry II and in occasional levies on personal property in the reigns of Richard I and John. With the reign of Henry III they became a recognised though 'extraordinary' method of taxation, being levied four times in the course of that reign and twice in the early years of Edward I. For administrative and historical reasons, however, the period covered by Professor Willard's book is particularly important. In 1290 these taxes ceased to be kept apart from the rest of the king's income (as had previously been the practice) and were placed under the direct control of the Exchequer. From this time until the date at which the book closes, the basis of taxation was the individual property owner, whose goods were valued by juries of his fellow citizens or villagers, under the direction of groups of chief taxers selected by the government. In 1334, however, a new plan of assessment was adopted, by which each administrative unit of taxation became responsible for a definite sum of money, which it was left to apportion among its inhabitants as it thought fit, and the sums agreed upon in this year became the basis of a standardized fifteenth and tenth, which lasted until 1623. The subject of Professor Willard's study is thus the period 'when taxes were elastic and when the machinery for handling them was being devised by the Exchequer'. The most striking phenomenon during the period is the decline in the returns, due partly no doubt to the fact that during the period between 1294 and 1297 a hitherto occasional levy was turned into an annual tax at a time when England was at war with France, Scotland and Wales. Professor Willard thinks that it was not due to mere depletion of capital but also to the prevalence and efficiency of methods of evasion, which the Exchequer had no effective means of combating.

The book is primarily important as a study in the technique of financial administration, but it contains a number of sections which are of considerable interest to economic historians. These are chiefly to be found in Chapter IV ('Moveables assessed and exempt') and Chapter VII ('Sidelights on the Assessment'). There is an interesting discussion on the incidence of taxation, leading to the conclusion: 'In most parts of the country the totals of the tax-charges against the tenants greatly exceeded that against the lord. . . . The people who were not wealthy paid the taxes of England in the thirteenth and fourteenth centuries, just as they do to-day' (p. 163). Professor Willard also shows conclusively that it is impossible to use these tax rolls as a basis for estimating the population of mediæval England, mainly on account of the impossibility of determining the number of people whose taxable property was worth less than the minimum provided, apart altogether from the further problem of estimating the size of the families surrounding a mediæval peasant or townsman. The fact of the matter is that none of the statistical materials with which the records of mediæval England provide us, whether they be records of taxes upon moveables and poll taxes, or manorial documents such as rentals and extents, are adequate for this purpose, and Professor Willard's conclusion must probably be accepted that 'the historian is therefore left with the alternatives of discreet silence, or vague and general statements of little value' (p. 182).

Eileen Power.

The Rationale of Central Banking. By VERA C. SMITH. London: P. S. King. 1936. Pp. xii + 185. 9s.

Why should banking, or at all events banks of issue, be subject to special forms of control, forms of control more rigid than those which apply to any other kind of business? This is the question to which Dr. Smith has addressed herself, and a most interesting volume is the result. Certain it is that in Britain the principles of *laissez faire* were finally abrogated in this field just two years before State intervention in the corn trade came to an end, and at a time when liberal principles were being successfully applied in almost all other spheres of economic life. The advocates of note issue monopoly were well aware of this inconsistency, and they produced various arguments to justify *laissez faire* in general, yet to deny its application to the business of banking. The adherents of the Currency Principle argued that note issue monopoly was necessary in order to make the circulation respond automatically to gold movements, and they hoped by this means to bring to an end, not merely the failure of individual banks of issue, but financial crises in general. Many of their opponents also—Tooke, Fullarton, Cairnes and Price, for example—agreed that *laissez faire* principles were not applicable to banking; and they invoked in argument the special gravity of the loss which falls upon poor or ignorant note-holders upon the failure of a bank of issue. Above all, the system of private banks —which alone (apart from the Bank of England) issued notes south of the Border prior to 1826—had undoubtedly worked badly; and their frequent failure, not least after the panic of 1825, caused much inconvenience and even misery. But though this might be an argument against note issue by small partnerships, it was not conclusive against free banking as such: for, as Joplin, Parnell and Wilson pointed out, Scottish joint stock banking had worked well. Whether the success of the joint stock banks of issue north of the Border was due to their larger size, or to the superior ability as bankers of the Scottish race, or to accidental influences, has I think never been made sufficiently clear. Certainly free banking, though not quite such free banking as in Scotland, worked passably in many States of the American Union during the thirties and forties, but there are scarcely any other examples.

While the practical issue is hardly likely to be re-opened in our own time, the theoretical feasibility of free banking has fascinated many people besides Professor Mises, and is comprehensively surveyed by Dr. Smith. The factors which prevent the over-issue of notes in a regime of competitive issues can be assimilated to those which hinder the indefinite expansion of bank deposits. It is plain for example that the drain of cash through the inter-bank presentation of notes must be a much more effective check than the presentation of notes by the public can ever be. It is interesting to observe that in the Scottish system notes were cleared between the banks regularly twice a week. If however all, or even a majority, of the banks expanded simultaneously, presentation by the public would remain the only guard against over-issue. If this were to happen it is no more certain that over-issue would be checked before a crisis supervened, than it is that the drain of cash into circulation to-day would pull our great deposit banks up in time if they agreed among themselves to disregard their reserve ratios.

But whatever we decide about the theoretical feasibility of a system of competitive issues, the decisive argument against it became, as Dr. Smith points out, the impossibility of arranging for last resort lending without monopoly. If economic fluctuations were to disappear altogether last resort lending might become unnecessary; but as long as fluctuations remain, alterations, often violent alterations, in the demand for liquid assets will occur, and with these a competitive system cannot deal. Dr. Smith rather scouts the idea that the possibility of monetary management, internationally with a gold standard, or nationally without one, might also be used to defend central banking as against free banking—perhaps because she is not impressed with the achievements of management in the past. But to many this possibility provides the strongest justification of all for central banking.

Dr. Smith not only discusses the history of the controversy in this country; she also includes chapters, both on the debates in France, Germany and the United States, and on the development of central banking in these countries. While in England after 1844 monopoly was taken for granted, in France especially a powerful group of writers, led by Courcelle Seneuil and Cernuschi, attacked the monopoly of the Bank of France right on into the sixties. The controversy may no longer be a burning one, but its history is the history of monetary theory. Dr. Smith is to be congratulated on a piece of work which is both an attractive yet scholarly essay, and a valuable work of reference. A bibliography has been included. In another edition, 1855 should read 1865 on p. 47, and the spelling of Myrdal's name corrected on p. 167.

HAROLD BARGER.

History of the London Discount Market. By W. T. C. KING. George Routledge & Sons, Ltd. 1936. xix + 355 pp. 15s.

Although the discount market is the most original and one of the essential parts of the British banking system no attempt had been made so far to trace its evolution as such. Mr. King is therefore breaking new ground and he has been so thorough and painstaking in his research work that he does indeed bring to light many illuminating facts in this history which covers the whole of the last century and extends as far as the eve of the war.

Mr. King has carefully gone through the evidence and reports of all the various Committees periodically set up to enquire into banking and monetary matters, and gathered from these sources a rich harvest of documentation which he has ably combined with that already existing in book form. The book is rendered more valuable still by a set of tables of discount rates and on the development of discount houses throughout the last century which will prove very useful to those interested in financial and economic history.

Mr. King tells us how bill broking originated from bills remittances in London by Norfolk wool dealers. How the famous Thomas Richardson—the real "father" of the discount market—developed considerably such business by giving up charging a commission to the lender, and adopting the contrary process of charging the borrower for discounting his bills.

Bill broking, as is well known, was in its early days an activity very closely connected with country banking. Mr. King has retraced in great detail and with considerable support of contemporary evidence the gradual evolution of the discount market, from bill broking to actual bill dealing through the development of the connections between brokers, bankers and the Bank of England in London. The great turning points were the banking crisis of 1825 and the Bank Act of 1844. The crisis of 1825 taught the London bankers that it was not safe to rely entirely upon the central institution; instead of using up all their funds and rediscounting their bills in time of stress they gave up the practice of rediscounting and began to protect themselves against possible "runs" through keeping a substantial cash reserve and lending money at call to the bill brokers. The brokers were thus enabled to finance bills themselves. It was, however, many years before they were able to do so to any large extent, mainly on account of the strict regulations of the usury laws which were only repealed in 1833. From this date the bill dealing business could develop although bill broking still remained for some years the dominant activity of most brokers. The basis was thus established of a system in which the pressure for money was to be borne by the discount market and in which the control of the market centred on the rediscount facilities granted by the central Bank to the brokers.

The relations of the bill brokers with the Bank of England, which at certain times, and notably in the sixties, were far from cordial, have been remarkably analysed by Mr. King, who gives an extremely interesting account of the slow process of evolution through which the Bank gradually awoke to its responsibilities to the market and evolved a policy of monetary control.

Whilst thus making a history of the technique and functions of the discount market, Mr. King has greatly relieved the dryness of his subject by keeping in touch throughout with the human element. Even the non-technically minded reader cannot fail to be deeply interested by his description of the rise and fall of the Gurney family, whose history is so closely interwoven with that of the discount market.

Few are the people in the City who would not learn from Mr. King's book, and get from it much food for thought about the vicissitude of the Discount and Money market and the considerable changes which have taken place over a century. During this time its main concern has altered in turn from home bills to foreign bills and now to Treasury bills—such change in the " commodity " dealt in has completely altered the functions and the meaning of the discount market.

I understand that Mr. King is working on a second book in which he will give us his analysis of more recent developments. May I suggest that it would be very useful if he could take this opportunity to give us more information about the private bill broking firms who have been playing quite an important part in the market and which he mentions only very briefly in Chapter VII. Surely his history would not be complete if limited to the discount companies who control about half the funds of the discount market.

In spite of this minor criticism the fact remains that Mr. King has rendered a very great service indeed both to City men and to economists in enriching their libraries with an excellent book. It is, in addition, one which will certainly be kept near at hand for frequent reference as it will surely remain for years to come the " authority " on the subject.

R. J. Truptil.

Studies in Administration and Finance, 1558–1825. By Edward Hughes. Manchester University Press. 1934. 21s.

The commodity salt has received less than its deserts in the history books. Even the large recent works on the age of mercantilism have hardly given it a passing notice, which is surprising when we consider the importance of its manufacture in Great Britain and its place in fiscal procedure and the regulation of trade. In the present study Mr. Hughes does a good deal to repair the omission, and not the least of his services to economic history is that he succeeds in displaying some of the significance of the subject in relation to the policies of state intervention.

It is an unusual book, for, apart from the theme topic, which vanishes and reappears in an unpredictable fashion, there is no uniformity of subject or texture, and all the problems, biographical, constitutional and administrative which Mr. Hughes' salt investigations have suggested as worthy of pursuit come as grist to the mill and are manœuvred somehow into five hundred closely printed pages.

A review of moderate length can neither do justice to the great merits of the work on the one hand, nor attempt on the other to describe the difficulties of the reader who tries to keep his head and sense of direction amid this wealthy profusion of miscellaneous scholarship. For scholarship there is, and a fine perception of the social significance of things. Mr. Hughes hunts up for us scores of riddles, most of them new ; enough indeed to keep a research institution busy for years. Some are brilliantly handled; others get bogged in a mass of detail and facetious comment. Sir Thomas Bernard, the philanthropist, one of the "protagonists of repeal" of the salt duties, was "shot through, like a dead pheasant, with class consciousness . . . no land reformer, no socialist" (!) Another protagonist was John Christian Curwen, the political reformer, "a hard-drinking, horse-racing squire, who employed Peel as his huntsman when a more celebrated Peel was hallooing in his cradle". Those whom Mr. Hughes has succeeded in giving an appetite for more and more salt will say that there is really too much irrelevant matter about the personalities which figure in this book, especially in the later period where he finds himself perhaps a little less familiar with the working of institutions.

The most interesting sections are in the middle part, from Elizabeth to George III. Salt, a universally desired commodity whose price and fields of production were peculiarly subject to the influence of the cross winds of international complications, such as war, came into prominence in monopoly grants, but failed to be brought within a systematic *gabelle* project. Mr. Hughes thinks that had the Elizabethan plans come more fully into operation they would "easily have dispensed with the need of parliamentary supplies". A useful study of monopoly management gives him opportunities for exercising his remarkable bent for interpreting economic tendencies as functions of administrative development. We meet some questionable assumptions—*e.g.*, that the attempts to exclude the Attorney-General from the Commons' house prevented a (surely precocious!) growth of a sense of parliamentary responsibility among the law officers of the Crown in the seventeenth century. In trying to stave off economic distress did Charles I "grasp the elementary function of government"? Is it correct to say that "ostensibly, at least, corporations were immortal, terminable only by voluntary surrender of their chartered rights"?

The Crown's expedient of securing voluntary consent to levies on industrial products among the interests concerned was a first step in the history of excise. Mr. Hughes presents the only intelligent account we have of the early history of excise, valuable not only because it rests on a careful study of the sources, but also because he employs it to illuminate some dark places in the development of bureaucratic procedure.

The collection of the salt duties from 1694 remained almost independent of the work of the excise commissioners, who had taken over from the farmers in 1683. The salt office suddenly came to an end in 1730 when the duties were repealed. But two years later the office and the duties had been revived, since no other means could be found of providing for the expelled revenue officers, a socially expensive employment relief scheme if ever there was one. Mr. Hughes' view is that the degradation of civil service appointments to the level of mere jobbery was not so much the triumph of Walpole's administration as of the

Pelhams' after it, although the customs departments had already succumbed in the earlier period. It is very clear that industrial developments, especially in the inland area of the West Midlands, were seriously held up by the government in order to avoid the expense of appointing additional officers; and also to some extent from considerations of economic planning which strove to keep the salt-pan, the brine-spring and the rock-salt methods of production on an equal footing of prosperity. Other matters to receive interesting treatment are the lobbying activities of persons interested in inland navigation proposals; the part played by the new chemical industries in the agitation for the repeal (which succeeded in 1825) of the salt duties; the close alliance of salt manufacture and coal-getting in Scotland, where workers in both industries were in a state of bondage until 1799.

The editors of the Manchester University Economic History Series are to be congratulated on the high standard of scholarship they have been able to maintain in a list of publications which now extends to ten works of exceptional merit.

A. V. JUDGES.

Family Expenditure: A Study of its Variation. By R. G. D. ALLEN and A. L. BOWLEY. London: P. S. King & Son, Ltd. 1935. 145 pp. 9s.

This book is one of the few studies of economic subjects which can be called "econometric" in the true sense of the word. It combines extensive and intimate knowledge of the data with a shrewd handling of statistical methods, and masterful application of the most recent developments of the theory of value.

It is an analysis of family budgets, and utilises not less than 21 collections of budget data in 13 European and American countries; also a very interesting original study conducted by Sir William Beveridge on behalf of the London School of Economics. It is to be hoped that these data may later be published separately and in more detail since they seem to furnish very interesting information, especially on the English professional and middle classes.

The book is divided into three parts: The first deals with average expenditure, the second with the distribution of individual expenditure about the average and the third with the theoretical analysis of demand. There is also a Mathematical Appendix on the latter subject. It is shorter and clearer than the previous presentation of indifference curve analysis.

The basis of the whole investigation is the new theory of value, somewhat simplified, which was first developed by Dr. Hicks and Mr. Allen in their two articles in ECONOMICA. But the authors chose as a first approximation a linear preference scale, or from the point of view of utility theory a quadratic utility function. This simplification is maintained through the whole study. It cannot be denied that it works better in general than one would expect, but there are cases in which the assumption of linearity seems to fail. It would have been interesting if the authors had investigated them with the help of the known statistical tests for linearity which involve a comparison between the correlation coefficient and the correlation ratio. Those deviations from linearity are, however, rather the exception than the rule.

The authors have made an extensive and successful use of graphical methods. The diagrams are frequent, clear and very well arranged. The statistical methods used are the method of least squares, the χ^2 test, the fitting of frequency distributions, including Gibrat's logarithmic distribution, and multiple correlation analysis.

The results reached are interesting for the economist in particular but also for the statistician and to some extent even for the sociologist, since the study on budgets includes a comparison of the tastes of different social classes and nationalities. There is a study of the relative urgency of needs which are satisfied by the different commodities. The income elasticity of demand, a new and important notion, is studied extensively both theoretically and statistically. The nature of the relation between different commodities, in so far as they compete with each other or are substitutes for one another, is also carefully analysed. So are the variations of expenditure on different items in the various budget collections, which throw some light on the reliability of cost of living index numbers. There are numerous studies of frequency distributions which form perhaps the most interesting part of the book. The distributions are not always normal, but more frequently than one would expect. The "proportional effect" distribution of Gibrat, which he first used in his study on the distribution of incomes, as an alternative to Pareto's law, is often useful. Here the logarithms of the data and not the data themselves are normally distributed. It should be pointed out that the authors are free from the bias of pure statisticians which spoils many similar studies. They never calculate statistical parameters for their own sake but are well aware of the economic problems which their study tries to solve. They always give economic interpretations of the statistical results and this is certainly not the least merit of their work.

The very nature of the study makes it impossible that many new and striking features should have been detected. But the results which in general are not new are often for the first time established by correct economic and reliable statistical methods. And the quantitative specifications contained in the book, however subject to random variation, are far more reliable than anything previously worked out in the same field. The numerous tables are well arranged and can easily be used by anybody who is interested in budget studies.

Mr. Allen's and Professor Bowley's book should encourage all those who try to apply mathematics and statistics in economics. It shows how it can be done successfully, not by aping the natural scientists but by the development and application of methods which are particularly fitted for the difficult task of economic and social problems.

GERHARD TINTNER.

Modern Production Among Backward Peoples. By I. C. Greaves. London School of Economics Series in Economics and Commerce, No. 5. George Allen and Unwin, Ltd. 226 pp. 10s. 6d.

Miss Greaves has produced a much needed study of the economy of regions in which western capitalism is impinging upon tribal organisation. The problems that arise have so far received more attention from anthropologists, administrators and politicians than from economists, and the book is especially welcome for that reason. The author is a competent economist who appears to have selected her sources with discrimination and thoroughness. Part of the book is devoted to a compact account of crops and methods of production, but the sections which concern the problem of labour supply, monetary incentives and standards of living are of broader importance. The "laziness" of "backward" peoples, their apparent unwillingness to work for wages except under direct or indirect coercion, constitutes one of the most interesting phenomena to which the student of labour questions can turn his attention. Miss Greaves's discussion is, we think, the best that has yet appeared on the topic.

The peculiarities of primitive labour can be summarised in terms of the demand for leisure, although that may be an unduly simple and hence misleading summary. We know, however, that to the tribal native the products of the industrial world—the things that money can buy—seem to have little meaning, and that his preference for income as against leisure is thereby affected. To increase wage-rates would frequently mean a decline, not a rise, in the supply of labour coming forward, for the native could then purchase his leisure with greater ease. We have, in fact, exactly the opposite of the situation which confronted western capitalism as it emerged into the industrial era. This fruitful contrast is not pointed out by Miss Greaves. The contrast is to be explained on grounds of differences of social heritage and climate. The fund of labour available in the early days of the Industrial Revolution was in part due to the virtual absence of demand for leisure on the part of the working classes. Hours of idleness were not attractive in relation to income attainable until restrictions of the working day (introduced from motives mainly unconnected with sincere appreciation of leisure) had caused the taste for leisure to develop. Expanding productivity of material things must also have been an important influence, but the "taste" factor was certainly present. It is *possible* to argue, therefore, that the coercion of the native peoples—through taxation or land alienation—to force them to co-operate within the capitalist economy is justifiable on the same grounds as the case for State limitation of hours of labour. Both *can* be defended as being of an educative nature, although this has certainly never been their *intention.* The detribalised native in industrial employment acquires the characteristics of a European workman in his attitude towards income, and among the working classes of Europe leisure has certainly come to be appreciated as an end in itself.

Although the merit of Miss Greaves's work lies largely in the insight which her theoretical training has made possible, the occasional intrusion of the jargon of economics must be reckoned as a defect. Native administrators, who should find the book valuable, will be mystified by her avoidable references to " moving demand schedules " and " productivity wages ". A phrase like: " opportunities for employment offered will be increasingly profitable until the native is earning the whole value of his productivity " is unintelligible to the typical colonial administrator, in whose training it has seldom been thought necessary to include economics.

W. H. Hutt.

Paris as a Financial Centre. By Margaret G. Myers. London: P. S. King & Son, Ltd. 1936. 177 pp. 10s.

Whilst the London money market has recently been the subject of several up-to-date surveys, the literature on the French banking system and Paris as a financial centre is singularly non-existent.

Miss Myers' study is therefore welcome, although it cannot be claimed that it fills the gap . . . The error in the conception of such a book is that it provides neither the thorough survey of the French banking institutions which we still await, nor, assuming that these are known, does it limit itself to a searching analysis of the short, medium and long term money market in Paris. As it is the author seems to have elected to steer an unsatisfactory middle course.

From the quality of the first chapters one may assume that granted the opportunity of a longer stay in France, the author would have produced the book which students of finance and banking are longing for. Chapters on the Bank of France, the Caisse des Dépôts et des Consignations and the Treasury are valuable indeed for they deal lucidly with an intricate theme. Furthermore they show a correct appreciation of the various factors at play, in drawing the attention to the main problems raised by the co-operation (or the lack of it) between these component factors.

The second part is less satisfactory. The author had indeed set herself an impossible task in attempting to deal adequately with the French banking system, the French investment market and the Paris money market in seventy-five pages. It would have been better to limit the scope of the book, thus avoiding the superficiality of a hurried review.

The bibliography given at the end of the book is a further evidence of the incomplete exploration of the field surveyed.

There is no doubt, however, that as we have already said the first chapters and notably that on the all-important and little known Caisse des Dépôts et des Consignations will prove quite useful to the readers.

R. J. Truptil.

Écrits Notables sur la Monnaie (XVI^e siècle), de Copernic à Davanzati. Edited by J-Y. LE BRANCHU. Paris, Librairie Félix Alcan. 1934. 2 vols. (civ + 177, 242 pp.). Fr. 35 each volume.

Daire's *Collection des principaux économistes* which appeared many years ago, in fifteen volumes, having become very scarce, the Librairie Félix Alcan has now undertaken a reproduction, with some additions, of that notable series of reprints. The new series is under the general direction of MM. Gaetan Pirou and François Simiand. These two volumes, the first of the new series, comprise eight pamphlets of sixteenth century England, France, Italy and Germany. M. J-Y. le Branchu has contributed a general introduction giving bibliographical and other details of the works, and has also annotated each work—a task which has obviously required much learning and painstaking research.

The collection derives a certain unity, despite the wide area from which it is drawn, from the concern of the various writers with the rise of prices which followed the influx of precious metals from America and with the consequences of currency debasement. It is interesting, though not surprising, to find that in the sixteenth century concern over the changes of the value of money was almost exclusively concentrated on the *distributional* effects of such changes. Serious disturbance of *production* by changes in the value of money is one of the incidental disadvantages of modern economies being more highly capitalised than were those of sixteenth century Europe.

The two papers by Copernicus are typical in this concern with the distributional evils of a fluctuating standard. His work also includes a clear view of Gresham's Law; but much of the space is devoted to merely numismatic details. The anonymous *Gemeine Stimmen von der Muntz*, first published in Leipzig in 1530, states the case against a projected devaluation of Saxon money. The *Paradoxes* of Malestroict is similar, but has the additional interest of having had great influence on subsequent French monetary policy. It has a further claim to inclusion in this collection, in that it evoked the *Réponse* of Jean Bodin (Paris, 1568) which is in some ways the best work in the series. For Bodin's work, though at times somewhat rambling in its detailed descriptions, does give us something more than do the earlier works—the scientific observation of economic phenomena. As a result of his systematic observations, Bodin was the first to attribute the rise of prices to the influx of precious metals from the New World.

In the second volume are Sir Thomas Gresham's "Advice to the Queen" (London, 1558), and Davanzati's "Lezioni delle Monete" (Florence, 1588), neither of which are of much intrinsic interest. But the "Compendious or briefe examination of certayne ordinary complaints" is of a different order. It is written in the form of a dialogue, but the bulk of the argument is in fact to be found in the lengthy discourses of the Doctor. Its inclusion is justified by the investigation of the cause of the high prices which were then the subject of much complaint. The high prices are eventually traced to Henry VIII's debasement of the coinage and to the new supplies of the precious metals. There is much more besides, of general interest—on enclosures, the decline of towns, religious differences, and so forth. The Editors might well have omitted some of the less relevant sections—as for example the thirteen pages on the relative educational merits of instruction and experience.

The English, German and Italian works have all been translated into French. In subsequent volumes this principle might be carried to its logical conclusion, and the spelling of old French words be modernised. In the "Compendious or briefe examination . . ." the insertion of a certain passage (incidentally one of the most significant from the point of view of monetary thought) as a footnote extending over parts of twenty pages is an exceedingly clumsy arrangement. But judged by French standards the production is remarkably good.

R. S. SAYERS.

La Monnaie et les Phénomènes Monétaires contemporains. By BERTRAND NOGARO. 2nd edition. Paris, 1935. 442 pp.

This is the second and much revised edition of a work which originally appeared in French in 1924 and in an English edition (*Modern Monetary Systems*) in 1927. The theoretical analysis has become much more substantial, and some description of the monetary events of recent years has been added.

Professor Nogaro emphasises in his Preface and throughout the book his dissatisfaction with "orthodox theory". The attempt to maintain a heretical position has led to a recurrent fault of over-emphasis, which has spoilt many otherwise unexceptionable arguments. (Only rarely, as on page 367, does he pass from undue emphasis to downright fallacy.) It also has unfortunate effects on his analysis of particular phenomena of recent years. For example, his emphasis on the rates of foreign exchange as largely independent forces operating on prices, etc., leads him to false positions. In explaining the "Miracle of the Rentenmark" he shows how the restoration of confidence, by making possible a repatriation of German funds held abroad, was sufficient to stop both the fall of the exchange rate and the rise of prices: had he investigated the difficulties of early 1924 he would have been obliged to admit the enormous importance of supporting the first steps by the appropriate (and orthodox) internal reforms. In dealing with the fall of the Czechoslovakian crown he rightly points to the inflationary loophole in Rasin's deflationary attack, but he does not go far enough into details to expose the fact that the situation—of Czech and foreign prices, the rate of exchange and the balance of trade—remains unexplained. The Strange Case of the Czechoslovakian Crown remains one of the unsolved mysteries of monetary history.

But it is when he attacks the classical theory of the distribution of monetary metals that his results are most astonishing. Criticising the view that prices are very high in goldfields as they first enjoy the additional money, he asserts that the high prices in e.g. the West Australian goldfields were the result of the high costs of transporting goods thereto. Then he goes on to show how exports of agricultural products were hindered, *not* as classical theory asserts, but because people deserted pastoral pursuits for the goldfields! In the confusion of the combat, Professor Nogaro has embraced the very theory which he set out to scotch.

There is no evidence in this book of Professor Nogaro having paid any attention to the important English and other works on monetary theory which have appeared since his own first edition. Consequently his " heresies " have a somewhat odd appearance: sometimes he tilts at windmills; occasionally he makes a shrewd thrust at some tottering giant; but more often his effort amounts merely to an unhandy spearing of corpses already in an advanced state of decomposition.

R. S. SAYERS.

A Source Book for Medieval Economic History. By ROY C. CAVE and HERBERT H. COULSON. Milwaukee: The Bruce Publishing Co. 1936. xx + 467 pp. $2.50.

This source book will be very useful to students working on the economic history of Europe during the first part of the Middle Ages. It is arranged in six parts, dealing respectively with Agriculture, Forestry and Extractive Industries, Commerce, Town Economy, Slavery and Serfdom, Wealth and Property and Taxation. The extracts are drawn from a very wide range of sources and are well chosen and translated and the book is furnished with a glossary of technical terms, a bibliography and an excellent index. Such a collection certainly meets a need often felt by students, for while it is not difficult to obtain sources suitable for study in connection with a course on English economic history, nothing of the kind exists for the economic history of Europe. For this reason it is impossible not to regret that the editors should have interpreted the term medieval so as to exclude the fourteenth and fifteenth centuries, since a collection covering the whole medieval period would have been more useful to students, at any rate in this country. It may also be suggested that some of the extracts err on the side of excessive brevity. A source book should not merely be a compendium of passages removed from their contexts, in order to illustrate particular points, but should be designed to illustrate the sources themselves. For this reason it would perhaps have been better to limit the number of extracts and to give more documents in full, or nearly in full, as has been done in the case of Charlemagne's capitulary *De Villis*. Nevertheless the book is an excellent compilation and the short introductory note with which each extract is provided will assist students to use it with intelligence as an accompaniment to their general reading.

EILEEN POWER.

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An Analysis of Unemployment

By Sir William Beveridge

I

Introductory

The Ministry of Labour publish each month statistics of employment and unemployment. Thus, "It is provisionally estimated that at 24th August, 1936, the number of insured persons, aged 16–64, in employment in Great Britain, exclusive of agricultural workers, was approximately 10,961,000. This was 66,000 more than at 20th July, 1936, and 500,000 more than at 26th August, 1935." "Among workpeople, aged 16–64, insured against unemployment (excluding agricultural workers), the percentage unemployed, including those temporarily stopped, in Great Britain and Northern Ireland was 12.3 at 24th August, 1936, as compared with 12.7 at 20th July, 1936, and 14.9 at 26th August, 1935."

The purpose of this paper is to go behind these general statements, and show some of the detail that they conceal. The persons recorded as unemployed month by month are not homogeneous. They are persons of different ages, sexes and capacities seeking employment in different industries and districts; they have been unemployed for widely differing periods of time and they stand in different relations to the two schemes of insurance and assistance established by the Unemployment Act of 1934. The beginning of an understanding of the problem of unemployment is to break it up.

What is attempted here is a beginning to that beginning. It is an analysis of unemployment only as it presents itself in the official statistics compiled by the Ministry of Labour. Most of the figures used here are taken from the *Labour Gazette* or other publications of the Ministry. But I have been allowed to use also the results of special calculations and special returns not published hitherto.

Analysis of the unemployment statistics of the Ministry of Labour must be preceded by a warning. The statistics are a by-product of administration. The count of the unemployed is not a compulsory census, but a count of those individuals who, having regard to the law and administrative practice of the time, have sufficient motive to record themselves at the Employment Exchanges. The "insured persons" are, in practice, those who apply for unemployment books. The record is affected accordingly by changes of law or administration. How great the influence of such changes may be is shown by the following table, comparing the mean rates of unemployment among males and females respectively for each year from 1927 to 1936, in the insured industries as a whole and in the single industry of printing, publishing and bookbinding.

TABLE I

RATES OF UNEMPLOYMENT OF MALES AND FEMALES, 1927—1936 G.B. & N.I.

All Insured Industries				Printing, Publishing and Bookbinding		
Year	Mean Unemployment Percentage		Rate for Females as per cent. of Males	Mean Unemployment Percentage		Rate for Females as per cent. of Males
	Males	Females		Males	Females	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1927	11.0	6.2	56	4.8	4.5	94
1928	12.3	7.0	57	4.4	4.3	98
1929	11.6	7.3	63	4.2	4.7	112
1930	16.5	14.8	90	6.2	7.6	123
1931 Jan.–Oct...	22.4	18.4	82	9.4	11.4	121
„ Nov.–Dec...	23.1	15.3	66	11.0	10.7	97
1932	25.2	13.7	54	11.4	9.2	81
1933	23.2	11.4	49	11.0	8.0	73
1934	19.3	10.0	52	9.7	6.7	68
1935	17.7	9.8	55	9.2	6.7	73
1936 Jan.–Aug...	15.6	9.1	58	8.6	6.9	80

The fourth column of this table shows the general rate of unemployment among females as a percentage of the corresponding rate among males. It will be seen that, at the beginning and end of the period covered, the percentages are much the same: 56–57 in 1927–1928 and 55–58 in 1935–36. But in 1930 and the first part of 1931, the percentages are quite different from these. In most of the years covered by the table, the rate of female unemployment is little more than 50 per cent. of the rate for males; in 1930 and 1931 it rises to 80 or 90 per cent. The main explanation of this is almost certainly to be found, not in economic conditions, but in changes of the insurance scheme. In the early part of 1930, a very important change of law was made, by dropping the condition that those claiming benefit must show that they were " genuinely seeking work " ; this condition had been applied extensively to certain types of claim, with a view to excluding from benefit persons who appeared to be no longer in the industrial field. As from October, 1931, the policy of this change was partly reversed by the operation of the Anomalies Act of that year ; certain classes of persons—of whom married women are much the largest—were required to satisfy special conditions, as a condition of benefit. The dropping of the " genuinely seeking work " condition admitted to benefit both men and women formerly excluded, but admitted women more than men ; while adding to the registrations of both sexes, it increased relatively the recorded unemployment of women. The Anomalies Act, by imposing special conditions on married women and seasonal workers, excluded some men, but a much larger proportion of women : it brought the recorded unemployment of women down again. The inference from these figures is that the statistics of unemployment to-day, among males at least, include a number of persons who would not have been counted among the insured unemployed before 1930.

This inference is confirmed by the statistics for the Printing, Publishing and Bookbinding industry, given in the other half of Table I. Before 1929 the rate of unemployment among females is not very different from that among males, rising from 94 in 1927 to 98 in 1928. In 1930 and the first part of 1931 the female rate is 20 per cent. or more above that of males ; in November, 1931, it falls abruptly, on the introduction of the Anomalies Act, and falls further still to 1934, when it is only two-thirds of the male rate. Now the percentage in the last column appears to be rising again, but is still well below the percentages before 1929. The violent inflation of women's unemployment by the abolition of the " genuinely seeking work " condition has been reversed by deflation under the Anomalies Act ; the lesser inflation of male unemployment remains.

It is not suggested, of course, that changes of administration or law are the sole cause of the relative changes of male and female unemployment shown in Table I. There seems, for instance, to be no obvious administrative explanation of the relative rise of women's unemployment in 1929, which appears both in the single industry of printing and in the general figures. Again, the depression of 1930–32 affected different industries in varying degrees and the proportions of women and men employed in different industries are diverse and changing. Table I is given as an illustration only of a line of investigation which could and should be carried further, in tracing the effects of legal or administrative changes on the record of unemployment. The table of disallowances by statutory authorities given below illustrates several such changes in recent years. The unemployment recorded in the Ministry of Labour statistics is unemployment according to a particular definition and the definition varies from time to time. The statistics must be read subject to this warning.

Properly interpreted, these statistics are, almost certainly, the best and most complete material for the study of unemployment to be found in any country. Their basis in administration is an advantage rather than the reverse. The "genuinely seeking work" condition was an attempt to limit the relief of unemployment at any moment to persons who were members of the industrial army—had been employed and were at that moment seeking their livelihood by further employment. The Anomalies Act is an alternative method—over a narrower field—of getting the same result.

The administrative character of the statistics makes necessary, as the first step in analysis, a study of unemployment in relation to the schemes of insurance and assistance. There follow in succession in this article analyses by industries, districts, duration, sex and age: these classifications naturally cut across one another at many points.

The analysis is limited to persons aged 16 to 64 under the general scheme of unemployment insurance. This excludes agricultural workers—covered by the agricultural scheme under which benefits will first become payable in November—boys and girls of 14 and 15 for whom contributions are payable but who receive no benefit directly, and persons in uninsurable employments, of which private domestic service is now the most important.

As appears from the two statements quoted at the head of this paper, some of the official statistics refer to Great

Britain only and others to Great Britain and Northern Ireland. The number of insured persons in Northern Ireland at July, 1935, was 270,000, as compared with 12,780,000 in Great Britain, so that the inclusion or exclusion of Northern Ireland makes relatively little difference in the general results; as a rule the unemployment percentage including Northern Ireland is .2 or .1 above that for Great Britain alone. Most of the figures used below refer to Great Britain, but some of the industrial tables cover Northern Ireland as well; its exclusion would have involved a separate tabulation of unpublished material.

II

RELATION TO UNEMPLOYMENT INSURANCE AND ASSISTANCE

The *Labour Gazette* contains each month a table headed "Composition of Unemployment Statistics, Great Britain." This table, from the necessity of showing separately agricultural workers, boys and girls aged 14 and 15, persons insured in the special schemes for banking and insurance, and uninsured persons who register at the Exchanges, has now become rather complicated. Omitting the classes named above, the insured unemployed fall into three main groups, in relation to the schemes of insurance and assistance, as set out in Table II.

TABLE II

COMPOSITION OF UNEMPLOYMENT STATISTICS : GREAT BRITAIN [1]

	Mean of June, July, August, 1936	
	Numbers	Proportions
A. Persons with Claims admitted for Unemployment Benefit	718,100	45.1
B. Persons with Claims admitted for Unemployment Assistance	605,354	38.0
C. Others		
1. Claims under Consideration ..	47,792	3.0
2. Not entitled—on Register ..	151,717	9.5
3. Not entitled—Two Months File ..	70,637	4.4
Total of Others	270,146	16.9
Total	1,593,600	100.0

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[1] Omitting agricultural workers, boys and girls aged 14 or 15, persons in special schemes for banking and insurance, and uninsured persons.

The proportions in the three groups vary from time to time according to season and the course of employment. Thus the proportion on benefit rises seasonally in January, when employment falls off after Christmas activity; in a cyclical movement, the proportion on benefit rises when employment first begins to fall off, and falls as soon as employment begins to recover. The figures given in Table II may be taken as typical of the situation in a time of active trade. Of every 100 insured persons counted as unemployed at such times 45 are admitted to benefit, 38 to assistance, and 17 or one in six are not admitted to either.

The general condition for receipt of benefit when unemployed is payment of thirty insurance contributions in two years preceding the claim. Unless his claim is disallowed on one of the grounds named below, a person with this contribution record can draw benefit, if unemployed, for twenty-six weeks after the first week of unemployment; by ten fresh contributions, he can qualify for a further twenty-six weeks of benefit in his next benefit year. Twenty-six weeks in the first instance is the minimum period of benefit; under the Unemployment Insurance Act of 1934, persons of good employment record in the past five years may get "added days". It is possible for such persons to draw benefit continuously for a year and more.

The general condition at present[1] for receipt of assistance when unemployed is payment of eight insurance contributions in two years before the claim or thirty contributions at any time. Subject to certain disqualifications (none of them now of much importance) and to the Means Test, a person with this contribution record can obtain assistance indefinitely, so long as he is unemployed.

The amount of insured employment required to establish a claim to benefit is not great. A contribution is payable for four hours' work in a week: in the limiting case, by working for four hours in each of thirty separate weeks, that is for 120 hours altogether, a workman can establish a claim to 156 days of benefit, and by a further 40 hours of work in ten weeks he can qualify for another 156 days in his next benefit year. It is not likely that this limiting case is ever realised in practice. But even apart from the possibility of making a full weekly contribution for less than a full week of work, men can remain insured for 26 weeks in each year by working for fifteen weeks each year. In view of this relatively low employment and contribution requirement, it is noteworthy that less than half of those unemployed at any time are entitled to benefit. Omitting claims under consideration, one person in every seven does not pass even the much easier requirements for assistance. What is the position of the persons forming Group C of Table II ? How do they come to be there ? What is their relation to industry ? How do they live ?

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[1] As from 1st April, 1937, the contribution requirement will lapse.

With the information now available, these questions cannot be answered completely. It is possible to indicate the principal classes of persons making up Group C, but not to say exactly how many fall in each class.

In the *Labour Gazette* table giving the composition of the unemployment statistics, this group is made up of three sections : Claims Under Consideration, Not entitled on the Registers of Exchanges, Not entitled in the " Two Months " File. The mean numbers in each of these sections in June-August, 1936, are shown in Table II.

The first section (numbering 47,792 in Table II) calls for little comment. The claims under consideration on the day when a monthly count is taken are substantially the claims made within the past three or four days. This represents the time normally taken to submit the claim for examination in the central register of insurance records at Kew. Statistically, a claim is treated as admitted to benefit if and when it passes the contribution test, even though it may be destined for disallowance later on information received from the last employer as to the cause of losing employment or on other grounds. Very commonly this information arrives after the authorisation has been received from Kew.[1]

Those in the second section (151,717 in Table II) either are not in a position to make claims for benefit or allowance, or have made claims and had them rejected, but continue to register at the Employment Exchanges. They may do so either with a view to getting employment, or because registration has been made in their case a condition of getting assistance from a Public Assistance Authority, or in order to get health contributions credited to them during unemployment. For all these reasons, a number of insured persons have motives leading to registration, even though they can get neither benefit nor allowance.

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[1] Most of the claims recorded as under consideration are in the " waiting week ", *i.e.* the first week of a period of continuous unemployment for which benefit is not payable. The rest of the waiting week claimants are in Group A with benefit authorised though not yet begun at the date of the count. In this analysis, the waiting week is treated as part of the benefit period (strictly therefore about 27 weeks rather than 26 weeks in the year) and " on benefit " means " with benefit authorised ". Under existing rules for running together as continuous periods of unemployment separated by short periods of work, the operation of the waiting week is much less than it used to be. It is estimated that of the total recorded unemployment from two to four per cent., according to the state of trade, is in the waiting week.

The third section (70,637 in Table II) described as the "Two Months File" consists of persons who, like the second section, are not in a position to claim benefit or allowance, or have made unsuccessful claims, but having lodged their unemployment books at the Exchange, leave them there, while ceasing to register. Some of these persons, no doubt, have obtained other work, insured or uninsured, or are sick, dead or abroad, and where this is known, their books are removed and they are no longer counted as unemployed. But if nothing more is known of these persons, their books are kept in a special file for two months after they were last heard of by the Exchange and during that time they are counted among the unemployed. After two months the books are transferred to a Dead File and no longer counted. The inclusion of the "two months" file in the number of the unemployed is a matter of assumption rather than of record. How far this assumption is justified and what these people are really doing is hard to say. All that is certain is that they had unemployment books lodged within the past two months and that they do not think it worth while to register in order to obtain employment.

Before considering this minor problem further, it is desirable to examine the circumstances in which an insured person, that is to say, a person holding an unemployment book, can fail to get either benefit or assistance. Broadly, these circumstances are of three kinds:

1. He may have an insufficient record of contributions either for benefit or assistance. This means less than eight contributions in the past two years and less than 30 at any time.

2. He may have sufficient contributions, but have his claim disallowed by a Court of Referees or Insurance Officer on some other ground (as set out later). Disallowance at present operates to exclude the claimant not only from benefit but from assistance and he can get relief, if at all, only from the Public Assistance Authorities; after the

coming of the second appointed day in April, 1937, responsibility for his relief will be transferred to the Unemployment Assistance Board.

3. Though otherwise qualified for assistance from the Unemployment Assistance Board, he may be excluded under the Means Test, that is to say, on the ground that the resources available for him are enough to cover his estimated needs; the Board in his case makes a "*nil* determination".

Table III on page 366 gives for each year from 1929 to 1935 and for the first part of 1936 the number of claims disallowed on various grounds, by statutory authorities under the Unemployment Insurance Acts. The table is interesting in several ways.

The four grounds named 1 to 4, at the head of Table III, are all technically grounds of "disqualification". They all show a tendency to fluctuate with the state of trade, falling from the comparative prosperity of 1929 to the depression of 1932 or 1933, and rising again with trade recovery; except for trade disputes, the disqualifications for the first eight months of 1936 are at a rate well above the rate for 1935. It is clear that workmen are more ready to leave their employment voluntarily and to be more particular about the kind of job which they will accept in times of good trade than of bad trade. The increase of dismissals for misconduct may mean that men are also less careful about their behaviour at such times. But it is probably due, in part at least, to the fact that men of inferior industrial quality more easily get employment.

Several grounds of disallowance are grouped under "5. Anomalies." The most important is that of married women, substantially on the ground that they no longer have a chance of employment, so that insuring them against unemployment would be insuring them, not against a risk, but against a certainty. The next most important is that of seasonal workers, substantially on the same principle; those who are not able to prove that they have normally some prospect of employment in the off-season are excluded from benefit during that season. By a change of regulations in 1935, the numbers affected by this disqualification have been reduced materially.

The disallowances under "7. Contribution Conditions" represent only the doubtful cases. The great bulk of those

TABLE III
CLAIMS DISALLOWED BY STATUTORY AUTHORITIES.

Grounds of Disallowance	1929	1930	1931	1932	1933	1934	1935	1936 (8 months)
1. Trade Dispute[1]	69,977	18,248	20,750	14,516	2,913	20,648	32,837	13,758
2. Employment lost through misconduct	54,741	52,897	53,111	40,821	38,169	42,029	46,535	34,720
3. Employment left voluntarily without just cause	93,693	89,291	53,561	58,232	61,386	78,265	91,883	72,479
4. Failure or refusal to apply for or accept suitable employment or failure to carry out written directions[2]	—	34,117	57,005	29,470	29,555	31,636	32,118	23,900
Not unable to obtain suitable employment[3]	40,639	10,182	—	—	—	—	—	—
Not genuinely seeking work[3]	312,520	34,304	—	—	—	—	—	—
5. Anomalies—[4]								
Seasonal	—	—	19,063	20,490	19,432	20,512	13,339	2,920
Normal employment not more than 2 days a week	—	—	1,659	2,576	1,714	1,676	1,596	988
Married women	—	—	134,089	56,967	40,414	36,867	42,131	29,836
6. Not capable of work or not available for work	Not available	11,313*	28,095	16,340	20,096	20,143	22,195	14,269
7. Contribution conditions	6,206	16,809	13,164	8,996	7,796	6,789	8,120	4,082
8. Transitional provisions other than contribution conditions[5]	109,068	181,241	200,802	139,501	105,118	88,897	26,910	13,431
9. Not unemployed	Not available	23,572*	46,184	37,821	36,912	34,521	40,803	29,309
10. Other grounds	29,881	26,900	50,200	49,378	56,169	41,175	48,694	45,853

* From 13th March, 1930.

[1] The figures include test cases affecting numbers of individuals considerably in excess of the figures shown.

[2] Introduced by the Unemployment Insurance Act of 1930—operative from 13th March, 1930.

[3] Abolished by the Unemployment Insurance Act of 1930 as from 13th March, 1930.

[4] Introduced by the Unemployment Insurance (No. 3) Act of 1931—operative from 2nd October, 1931.

[5] Modified by the 1930 Act as from 13th March, 1930. The present ground of disallowance is that the claimant is not normally insurable and/or will not normally seek to obtain livelihood by means of insurable employment.

without sufficient contributions make no claim. The "other grounds" in 10 cover a great variety of cases, such as being abroad, or in an institution, or in receipt of a sickness or disability benefit; most of these persons, like "6. Not Capable of Work or not Available for Work", are, like those under 9, not unemployed within the meaning of the insurance scheme.

Under "8. Transitional Provisions Other than Contribution Conditions", a person who has satisfied the contribution condition for assistance may nevertheless be excluded, on the ground that he is not normally insured and/or is not normally seeking to obtain a livelihood by means of insurable employment. This ground of exclusion at one time affected large numbers of men, but by change of administrative practice has become unimportant. Until the latter part of 1934, cases in receipt of transitional benefit were automatically brought under review every three months and those who appeared to fall under this ground of disallowance were excluded. The stoppage of this practice of reviewing led, as will be seen, to a great decline in the number of disallowances in 1935; a further decline has followed in the present year, upon the adoption of the rule that a person who had received benefit during 1935 should not again fall under this condition. In practice disallowance on this ground is seldom applied to persons who have been employed in the depressed staple industries—mining, shipbuilding, textiles, etc.—or might have expected to grow up into employment in them, if the industries had remained prosperous. Such persons are left permanently in Group B, on assistance.

Neither the Means Test nor disallowances for other than contribution conditions account directly for any large proportion of the 270,000 persons reckoned as unemployed in Group C. During 1935, the average number of persons continuing to register at the Exchanges as unemployed after receiving "*nil* determinations" from the Unemployment Assistance Board was 36,000. A certain number of others with "*nil* determinations" may have passed into and out of the "Two Months" file, not needing employment sufficiently to register for employment alone; but this number cannot be great. The four disqualifications at the head of Table III exclude about 18,000 persons a month in the active conditions of 1936 and excluded 11,000 to

12,000 a month in the depression of 1932–33. The maximum period of disqualification, except for trade dispute, being six weeks, the average period for which a claimant remains disqualified and unemployed in times of active trade must be much less; in the conditions of to-day many of these persons get back to work almost at once. The Anomalies Act excludes about 5,000 persons a month, mainly young married women. After taking account of other grounds of disallowance and of the fact that a proportion of the claims disallowed first appear as admitted in Group A or Group B, it seems fair to say that Means Test, disallowances by statutory authorities and claims under consideration together account directly for something like 110,000 in Group C. This leaves 160,000 to be accounted for in other ways.

The position of about 80,000 is known. They are insured persons registering at the Employment Exchanges as the condition of receiving outdoor relief from the Public Assistance Authorities.[1]

As to the remaining 80,000 there is no specific information. It seems likely that the number itself is exaggerated; i.e. that the Two Months File is an excessive allowance for persons unemployed and available for work but not caring to register. This file automatically carries for two months every married woman disallowed as being really not in the industrial field who does not think it worth while to register for work; women and girls form nearly half of the two months file, though they are only one-sixth of all the unemployed upon the register.

Of the rest of the 80,000, some, though holding unemployment books, may really be people of other livelihoods: in marriage or domestic life, or working on their own account: they fail to contribute or are disallowed as not normally insurable. Others may reflect the indirect working of the Means Test: they are not qualified for benefit and knowing that their family resources would exclude them from assistance, they do not apply. Others may represent a similar indirect working by anticipation of disqualification or the Anomalies regulations. These last three classes may all find it worth while to register in order to frank their cards for health insurance.

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[1] In March, 1936, about 84,000 persons in receipt of public assistance were insured persons registering at the Exchanges; nearly all of these would be included in the 180,000 persons then in the second section of Group C. It may be added that the adult uninsured persons on the register of the Exchanges are largely public assistance cases. The industries outside the general insurance scheme—agriculture, domestic service, and the permanent staffs of railways and public authorities—do not yield many registrations. The "uninsured" unemployed are largely people of poor industrial record who have lost their unemployment books.

The inference to which this examination leads is that, in Group C, the record of unemployment in the insured industries is swollen appreciably by persons whose attachment to those industries is slight : by people of other livelihoods, by people on nearly permanent relief, by workpeople of low industrial quality representing a personal rather than an industrial problem. Any attempt to interpret this inference numerically is better postponed till other aspects of the analysis have been completed.

III

UNEMPLOYMENT BY INDUSTRIES

The statistics of unemployment published each month by the Ministry of Labour are given separately for each of 104 " industries ". The unemployment recorded for different industries varies greatly. In August, 1936, the percentage unemployed in all industries taken together in Great Britain was 12.1. Taking the industries separately, the percentage was as low as 2.9 in Tramway and Omnibus Service, and 3.4 in the Making of Scientific and Photographic Instruments and Apparatus ; it was as high as 30.5 in Shipbuilding and in Port Transport, and 42.8 in Public Works Contracting. The percentage for all industries taken together is an average concealing extreme variations from one industry to another.

The various industries differ, moreover, from one another not only in respect of their unemployed percentages—that is their volume of unemployment, but also in respect of its nature—that is its distribution among individuals. Special returns have been obtained by the Ministry for the 8th June, 1936, showing for each industry (*a*) the proportions of the total unemployment covered by insurance or assistance or excluded from both these on various grounds ; (*b*) the proportions of all the applicants for benefit or assistance who had been continuously registered as unemployed for various periods, from less than three months to twelve months or more. The latter figures (to be described more fully in Section V on 'Duration') do not cover all the unemployed but only seven out of eight. The returns relate in all cases to Great Britain and to men and women from 18 to 64. The proportion of total unemployment covered by benefit in all industries averages 47.4 per cent.; in particular industries the percentage ranges from 19.0 in Public Works Contracting or 24.2 in Pig Iron Manufacture to 79.0 in Woollen and Worsted or 85.0 in Port Transport. The proportion of unemployed applicants for benefit or assistance who have been registered continuously for twelve months or more averages 23.9 per cent. over all industries; in particular industries, the percentage ranges from 1.4 in Port Transport or 4.7 in Silk or Hosiery to 50.8 in Iron Mining or 51.3 in Pig Iron Manufacture. It is as fallacious to speak of "unemployment" in general as to speak of "labour" in general, without distinguishing between different industries and different types of unemployment.

What is the explanation of the differences between industries? In particular, how far can they be explained by relative changes in the demand for labour in each industry? How far can differences in the unemployment percentages for different industries be related to changes in the number employed, that is to say, to changes in the effective demand for labour in each industry?

The Ministry of Labour publish each year another set of figures which can be used to throw light on this question. They record for July of each year for each industry the number of insured persons and the number of such persons in employment (i.e. after deducting from the total of insured persons those who are unemployed); they show these numbers each year as index numbers, taking the figures for 1923 as basis. In preparing these index numbers, allowance must be made for a change in 1928, excluding from insurance persons aged 65 and upwards; the numbers insured in 1923 and 1936 cannot be compared directly. For 1927, however, two sets of figures are available—giving the insured persons of 16 and upwards and those aged 16 to 64, and this makes it possible to construct index numbers for direct comparison between years before and after 1927. In 1927 the total number of insured persons aged 16 and upwards in employment was 11,061,614; exclusion of those above 64 brought the number down to 10,745,200.

In July, 1935, the number of insured persons in all industries was 117.0 as compared with 100.0 in July, 1923; the number of insured persons in employment was 111.7 as compared with 100.0 in July, 1923. That is to say, in twelve years, the total of insured persons had risen 17 per cent. and that of insured persons in employment had risen just under 12 per cent.; the difference between these percentages reflects increase of unemployment.

The changes for particular industries are widely different. Some industries have grown much more rapidly than the average; others have grown less rapidly or have declined. At one end of the scale, the number of insured persons in employment in Electric Wiring in 1935 was 313.7 as compared with 100 in 1923; at the other end the numbers employed in Coal Mining had fallen to 54.3 per cent. of the 1923 number, in the making of pig iron to 51.6 per cent., and in unspecified mining and quarrying to 41.8 per cent. On the basis of these figures the various industries have been classified in the following groups:—

I. Thirty-eight industries in which the numbers employed have risen more rapidly than the average of 11.7 per cent., since 1923, and in which, in the absence of special circumstances, the increase may be attributed *prima facie* to growth of demand for labour. These are described as " Progressing " and consist of 29 manufacturing and nine other industries. They included in 1923 3,006,810, and in 1935 4,296,730 insured persons aged 16 to 64, employed and unemployed.

II. Twelve industries in which the numbers employed have fallen by more than 20 per cent. since 1923, described as " Declining ". They include nine manufacturing and three extractive industries. In 1923 they were nearly as large as Group I, with 2,719,370 insured persons aged 16 to 64; in 1935 with 2,077,600 insured persons, they are less than half as large as Group I.

III. Seven industries where expansion of the numbers insured appears to be due to special circumstances, making it unjustifiable to class them with Group I.

IV. Two industries where contraction of the numbers insured appears to be due to special circumstances, making it unjustifiable to class them with Group II.

V. Forty-one other industries where the number of insured persons in employment in 1935 was more than 80 per cent. but less than 111.7 per cent. of the corresponding number in 1923.

The number of industries in these five groups—100—is less than the number 104—for which separate unemployment percentages are now published monthly in the *Labour Gazette*, because certain industries formerly combined have been divided.

Table IV[1] gives for each industry in those five groups the number of insured persons at July, 1935, the numbers of insured persons in employment in July, 1923 (ages 16 and upwards), and in July, 1935 (ages 16–64), index numbers showing the growth since 1923 of the numbers insured and numbers insured in employment, the mean percentages unemployed in the calendar year 1924, in the twelve months April, 1935–March, 1936, and in the six months April–September, 1936. This part of the table relates to Great Britain and Northern Ireland. The other part of Table IV gives for Great Britain the percentages unemployed on 22nd June, 1936, the proportion of those unemployed on 23rd March, 1936, who were on benefit, the proportions of those unemployed on 8th June, 1936, who were respectively on benefit, on assistance and on neither, and the proportions of those claiming benefit or assistance on 8th June, 1936, who had been unemployed for varying periods from less than three months to twelve months or more. These statistics represent for the most part information furnished specially by the Ministry of Labour and are printed in full, as they are not published elsewhere.

For most of the industries in Group I the number in employment in 1935 is greater than in any previous year, i.e. the index number in column 6 is the maximum. Where that is not the case, the maximum and the year in which it was reached are given in brackets after the name of the industry in column I. In Group II, in the same way the year of minimum numbers employed and the index number are given in brackets in column I, when the index number in column 6 is not the minimum. Group V is subdivided into three: manufacturing industries in which employment has expanded since 1923, though not so much as to bring them into the class of progressing industries forming Group I; manufacturing industries in which employment has contracted since 1923, though not so much as to bring them into the class of declining industries, forming Group II; industries other than manufacturing which equally have been subject either to moderate expansion or moderate contraction.

The unemployed percentages given for each group or subgroup are weighted by the numbers in each industry.

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[1] Table IV will be found inside the back cover.

In Group I, the number of insured persons in employment in July, 1935, was 141.0 per cent. of the corresponding number in 1923; that is to say, the effective demand for labour, disregarding differences in the type of workpeople employed, had risen 41 per cent. in twelve years, during which the total insured population in employment had risen 11.7 per cent. Nevertheless, at the end of this period of progress the mean percentage unemployed was 10.8 in the twelve months April, 1935, to March, 1936, and was 8.7 in the six months, April to September, 1936.

In Group II, the number of insured persons in employment in July, 1935, was 63.5 per cent. of the corresponding number in 1923, that is to say, the effective demand for labour had fallen 36.5 per cent. The percentage unemployed over the twelve months, April, 1935, to March, 1936, was 23.0, and in April to September, 1936, was 20.1.

Taking September, 1936, by itself, the unemployment percentage for Group I is 8.7 and for Group II is 18.1. In terms of unemployment, the difference now between the industries of Group I with a swiftly expanding demand for labour and the industries of Group II in catastrophic decline, is the difference between 9 per cent. and 18 per cent. This result is reached after excluding the industries which for special reasons have been placed in Groups III and IV.

The explanation of Group IV is short and simple. In Railways and National Government alike, unemployment insurance covers part only of the field: all the pensionable employees—a large proportion of the whole—are excluded from insurance. A considerable change accordingly in the numbers insured may mean no more than a transference between the insured and uninsured sections; it is no measure of the demand for labour in the industry as a whole.

The explanation of Group III is more complicated. The seven industries in this group show a greater rise in the effective demand for labour, as measured by insured persons in employment, than those in Group I (54.9 as against 41.0 per cent.) combined with a higher percentage of unemployment in 1935–36 (16.2 per cent. as against 10.8 per cent.). The inclusion of these industries with Group I would make even more striking the paradox of rapidly rising demand for labour and persistence of unemployment. But for various reasons it is necessary to treat these industries as special cases.

In Fishing it is probable that the growth of insured persons represents an extension of insurance rather than an expansion of the industry: the terms of employment have been adjusted in some districts, with a view to bringing into insurance persons previously excluded as "share fishermen", i.e. fishermen remunerated wholly by a share of the catch.

Public Works Contracting and Local Government Service are industries not on a commercial basis and expansion of the numbers insured in them has to a considerable extent been artificial. Unemployed miners, shipbuilders and others from the depressed industries, who have been put upon road-making or other public works or given a temporary job under a municipality, have thereby been transferred for insurance purposes to a new classification, and, when their job has ended, some at least of them figure as unemployed not in their original industry, but in the new one.

In the economic conditions of the past twelve years, Public Works Contracting, with its present 43 per cent. of unemployment, and Local Government have been to a large extent "overflow" industries. The same holds probably to a lesser extent of each of the other industries in Group III—Distribution, Road Transport, Entertainment, Hotels, etc. Though, unlike Public Works and Local Government, they are on a commercial basis, they are the kind of industries —open, unspecialised, spread over the whole country—most subject to invasion by persons driven out of the declining industries. But there is another way also in which the wide distribution of these industries over the whole country has made them peculiarly subject to unemployment. In the depressed areas of mining or shipbuilding or textiles they have not only been a refuge for the unemployed of the staple industries; they have themselves been depressed by falling off of the normal demand for their services.

For these reasons, the relation between unemployment and changes in the numbers employed shown by the industries in Group III must be regarded as abnormal. Comparison of the two sets of index numbers in columns 5 and 6 shows that in some respects Group III is nearer to Group II than to Group I.

Group V includes all those industries where the numbers in employment have changed relatively little since 1923—have either expanded by less than the average increase for all industries taken together or have declined by less than 20 per cent. The industries other than manufacturing in this group, including Shipping and Dock and Harbour Service, have a high normal rate of unemployment. The manufacturing industries are shown in two sections, according as there has been a net increase or a net decrease of employment since 1923. Both sections have much the same rates of unemployment in April–September, 1936, about 9.9 and 10.6; for September alone they are even closer, at 10.1 per cent. and 9.9 per cent. respectively.

The statistics thus summarised lead to important conclusions. Rapid decline in the volume of employment, that is to say, in the demand for labour, in any particular industry will naturally cause severe unemployment, as it has done in the declining industries of Group II. But substantial growth in the demand for labour in other industries will not abolish unemployment in them. In individual industries, as in all industries taken as a whole, employment and unemployment can grow together. In respect of the rate of unemployment to-day there is, indeed, no great difference between Group I, that is to say, those industries where employment has grown rapidly in the past twelve years, and Group V, where it has increased slowly or declined a little. Taking the manufacturing industries alone in these two groups, the difference between their present rates of unemployment after four years of trade recovery is, roughly, the difference between 8 per cent. and 10 per cent.

In our total unemployment to-day a substantial portion is contributed by the old staple industries in decline—coal and iron mining, cotton and other textiles, shipbuilding and marine engineering, pig iron. There is another and larger portion in prosperous industries. It arises through the ups and downs of particular businesses; through seasonal fluctuations; through labour being of the wrong kind or in the wrong place; through expansion in one district drawing fresh labour into an industry locally, though men in the same industry are unemployed elsewhere; through personal disabilities of age or character or physical capacity. Before the war it was common to talk of an irreducible minimum of unemployment of 2 per cent. This was the figure to, or near to which the mean percentage of unemployment in trade unions usually fell in years of boom. To-day the irreducible minimum under unemployment insurance and assistance—the unemployment that will not be melted away by prosperity even in our prosperous industries—must clearly be put much higher than 2 per cent. Of the 29 manufacturing industries in Group I only six have now (September, 1936) less than 6 per cent. of unemployment; notoriously prosperous industries, like brick and tile making, or hosiery, have percentages of 8 per cent.; building at the height of seasonal and cyclical fluctuation has nearly 12 per cent.

Just what figure we should now substitute for the 2 per cent. of pre-war days as the irreducible minimum of frictional, seasonal and personal unemployment, it is impossible to say. The 8.7 per cent. recorded as the mean of the most rapidly progressing industries is probably too high for completely normal times. For the reasons given, it has seemed desirable to separate the industries of Group III from the rest, as specially subject to invasion from depressed industries of Group II or affected by their depression. But the distinction in these respects between Group III and Groups I or V is one of degree, rather than one of kind. All other industries are affected to some extent by the depression of the declining industries—have more unemployment than they would have if the old staple industries were not in process of contraction and more than they may expect when the contraction is completed. Contagion spreads from the depressed industries in two ways. On the one hand, labour extruded from the depressed industries has tended to overflow in all directions and not only into the special industries included in Group III. On the other hand, there are laundries, garages and printing establishments, as there are shops and hotels in the depressed areas, serving the needs of those areas exclusively or chiefly and involved in their misfortunes. As is shown in the section on Unemployment by Districts, the northern parts of Britain and Wales have high rates of unemployment, not only in their depressed staple industries, but in industries which are generally prosperous.

In order to make a general survey, it has been convenient to begin by grouping industries, in relation to their growth or decline since 1923. But the main lesson of the analysis of unemployment by industries, as set out in Table IV, is to show the dangers of grouping and the marked differences in respect of unemployment between industries whose growth or decline has been similar. The rapidly growing industries of Group I have on an average a slightly lower rate of unemployment than the other groups. But they include industries with rates of unemployment far above the general average both now and in 1924 (Artificial Stone and Concrete, Glass Bottles, Iron and Steel Tubes) and other industries in which unemployment was below the average in 1924 but has increased substantially in spite of rapidly growing employment since then (Heating and Ventilating Apparatus, Brick Tile, etc., making, Furniture making, Hosiery, Stone Quarrying and Mining, Slate Quarrying, Gas, Water and Electricity Supply).

On the other hand, two of the industries in Group II (Carriage and Cart making and Woollen and Worsted manufactures) which have suffered a severe contraction of employment, nevertheless now have unemployment below the general average. Another industry in this group (Iron Mining) shows marked contraction both of employment and of unemployment.

The highly distinctive character of unemployment in each industry appears even more clearly from the second part of Table IV, showing the proportions of total unemployment covered by benefit or assistance and the duration of unemployment in individual cases. As a rule men come to assistance only after they have exhausted insurance; in general one would expect to find a low rate of unemployment associated with a large proportion on benefit and *vice-versa.* With a few exceptions, this relation does hold when unemployment is analysed by districts; that is to say, it holds in comparing the different counties of Britain. In the analysis by industries, the exceptions are more obvious than the rule.

The highest proportion of unemployment covered by benefit (85.0) is found in Port Transport in combination with a very high rate of unemployment. The system of casual engagement distributes unemployment evenly over the whole body of men, and prolonged, continuous unemployment is practically unknown; contributions are paid habitually in respect of less than a full week of employment. In Port Transport, unemployment insurance acts as a subsidy to wages, keeping together the reserve of labour without which reliance on casual engagement would break down. Other industries showing the same characteristics of high total unemployment, high proportion on benefit and relatively little long period unemployment are Tinplates, Pottery and miscellaneous Mining and Quarrying.

Apart from these industries, high proportions of unemployment on benefit are almost confined to the textile and clothing industries, and are found in nearly all of them, irrespective of their rate of unemployment: in Textile Bleaching or Hat and Cap Making (with unemployment of 15 per cent. or more) as much as in Hosiery, Silk or Carpets (with rates of unemployment well below the general average). By systematic short-time and in other ways the total volume of unemployment is spread over a large number of individuals; long-period unemployment is little known.

Port Transport combines an exceptionally high rate of unemployment with a high proportion on benefit. The exceptions opposite to this are almost equally striking. Commerce and Finance with one of the lowest rates of unemployment of all (3.8 per cent. in June, 1936) has less than 40 per cent. of this unemployment on benefit; in this industry unemployment tends to be concentrated on particular men and prolonged in the individual case, in place of being distributed over the whole body of persons seeking employment. The reasons for this, in Commerce and Finance, are obvious, though the degree of concentration is surprising. But other industries, such as Chemicals or Gas, Water and Electricity Supply, present the same features in a less degree: they both now have unemployment well below the average, but so concentrated on individual cases, that the proportion on benefit is small and the proportion of long-period unemployment—lasting twelve months or more—is high.

In concluding, in 1909, the opening chapter of my first study of unemployment, I expressed the view that "unemployment depends not so much on the volume of industry as upon the methods of industry, and while the methods remain unchanged, will continue or recur, however the volume grows. A falling demand for labour may come as a symptom of national decay. A rising demand for labour will be no cure for unemployment."[1] The statistics just presented are a striking confirmation of this view; their dominating features are the distinctive range and character of unemployment in each particular industry. My thesis of thirty years ago is not the whole truth about unemployment, but is a large part of it, and, I believe, the most important part.

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[1] *Unemployment—A Problem of Industry* (1909, p. 15).

IV

Unemployment by Districts

The incidence of unemployment is different in different parts of the country. The upper part of Table V shows for July in each year from 1929 to 1936 the unemployed percentage in each of the eight Divisions into which Great Britain is divided for the administration of Labour Exchanges and Unemployment Insurance. The figures relate to one month only in each year, but, as appears from the two rows of figures for Great Britain, the percentage of unemployment in July is not, as a rule, materially different from the mean for the year. Over eight years, the averages for July and for the calendar years are practically the same. The percentages for July, 1936, being based on the numbers of insured persons in July, 1935, are subject to revision when the new statistics from the exchange of books in July, 1936, become available, but the changes made are likely to be small.

Table V

UNEMPLOYMENT BY DIVISIONS—ALL INSURED PERSONS 16—64

(Unemployed Percentage in July of each year)

Division ..	1929	1930	1931	1932	1933	1934	1935	1936	Mean of 8 years
London	4.7	7.6	11.6	13.1	11.0	8.5	7.8	6.5	8.8
South-Eastern ..	3.8	6.6	10.2	13.1	9.5	7.0	6.4	5.6	7.8
South-Western ..	6.8	9.2	13.1	16.4	14.1	11.6	9.6	7.8	11.1
Midlands ..	9.5	16.1	21.8	21.6	17.6	14.0	11.8	9.4	15.2
North-Eastern ..	12.6	21.6	29.9	30.6	25.7	23.3	21.5	16.6	22.7
North-Western ..	12.7	25.4	28.9	26.3	23.4	20.6	19.3	16.2	21.6
Scotland ..	11.2	18.4	27.4	29.0	25.8	23.1	21.2	18.0	21.8
Wales	18.8	26.5	32.0	38.1	34.5	32.2	30.0	28.5	30.1
Great Britain—									
July	9.7	16.7	22.1	22.9	19.5	16.7	15.2	12.6	16.9
Mean for Year...	10.3	15.8	21.1	21.9	19.8	16.6	15.3	13.5*	16.8
South Britain ..	6.4	10.4	14.7	16.2	13.2	10.4	9.0	7.4	11.0
North Britain and Wales ..	12.9	22.6	29.2	29.5	25.8	23.2	21.5	18.0	22.8

* Jan.—Sept.

The table shows a marked diversity between different parts of the country. In each of the four Divisions at the top of the table, unemployment is now less than 10 per cent., as it was in 1929; over the eight years the mean ranges from 7.8 in the South-Eastern Division to 15.2 in the Midlands. In the four Divisions at the bottom of the table, unemployment is at a much higher level. The North-Eastern, North-Western Divisions and Scotland are fairly close together, with mean percentages for the eight years of 21.6 to 22.7; Wales stands by itself with a present unemployment of 28.5 per cent. and a mean of 30.1 for the eight years.

In experience of unemployment, Great Britain can be divided into two Britains—South Britain and the North and Wales. In South Britain, unemployment, starting at 6.4 in 1929 before the depression, rose in 1932 to 16.2, and has now returned to 7.4—very near the level of 1929. In the North and Wales, unemployment starting at 12.9 rose in 1932 to 29.5 and has now returned to 18.0. The percentage of unemployment in the North and Wales was twice as high as that of South Britain before the depression and is now nearly two and a half times as high.

The contrast between the two Britains is illustrated from another aspect by Table VI, showing the numbers of insured persons in each region from 1929 to 1935, distinguishing men, women, boys and girls. The insured population of the two Britains are of roughly equal size. Before the depression the North and Wales had slightly the larger number, 5,958,750, as compared with 5,741,250. But, whereas in South Britain the numbers have risen substantially each year, in the North and Wales they reached a maximum in 1931 and have fallen appreciably since then. The insured population of South Britain is now slightly larger as well as more prosperous than that of the other Britain.

In Britain as a whole, the insured population as a whole is still rising steadily. The revised figures for 1936 seem likely to show an increase of 1,000,000 on those for 1929. Table VI brings out clearly the strikingly different course of events in regard to boys and girls aged 16 or 17. Since 1930, the numbers for both sexes have fallen rapidly. Boys, from 583,000 in 1929, are 450,000 in 1935—a decline of nearly 23 per cent. Girls, from 435,000 in 1929, are 357,000

INSURED PERSONS IN JULY OF EACH YEAR—SOUTH BRITAIN AND NORTH BRITAIN AND WALES

	1929	1930	1931	1932	1933	1934	1935	1936
MEN 18–64								
South Britain	3,819,200	3,906,800	4,064,700	4,146,100	4,202,200	4,300,100	4,408,800	
North and Wales	4,102,800	4,177,200	4,285,300	4,341,900	4,373,800	4,395,900	4,393,200	
Great Britain	7,922,000	8,084,000	8,350,000	8,488,000	8,576,000	8,696,000	8,802,000	
WOMEN 18–64								
South Britain	1,390,420	1,445,300	1,517,500	1,504,700	1,551,600	1,578,200	1,595,600	
North and Wales	1,369,580	1,434,700	1,482,500	1,430,300	1,450,400	1,429,800	1,422,400	
Great Britain	2,760,000	2,880,000	3,000,000	2,935,000	3,002,000	3,008,000	3,018,000	
BOYS 16–17								
South Britain	294,690	300,800	290,720	282,690	264,170	240,950	227,710	
North and Wales	288,310	289,200	284,280	271,310	240,830	227,050	222,290	
Great Britain	583,000	590,000	575,000	554,000	505,000	468,000	450,000	
GIRLS 16–17								
South Britain	236,940	244,120	234,690	228,860	216,200	199,740	189,550	
North and Wales	198,060	201,880	200,310	194,140	173,800	168,260	167,450	
Great Britain	435,000	446,000	435,000	423,000	390,000	368,000	357,000	
ALL INSURED PERSONS								
South Britain	5,741,250	5,897,020	6,107,610	6,162,350	6,234,170	6,318,990	6,421,660	
North and Wales	5,958,750	6,102,980	6,252,390	6,237,650	6,238,830	6,221,010	6,205,340	
Great Britain	11,700,000	12,000,000	12,360,000	12,400,000	12,473,000	12,540,000	12,627,000	

TABLE VII

UNEMPLOYMENT IN CERTAIN INDUSTRIES IN 1929 AND 1935—BY DIVISIONS

	1929					1935				
Division	Building	General Engineering	Electrical Engineering	Motor Vehicles, etc.	All Insured	Building	General Engineering	Electrical Engineering	Motor Vehicles, etc.	All Insured
London	10·4	4·1	2·8	3·9	5·6	14·8	6·0	4·5	5·1	8·5
South-East ..	7·2	3·8	2·2	4·7	5·6	8·7	5·4	3·9	4·3	8·1
South-West ..	9·9	4·5	3·7	4·5	8·1	13·0	5·4	6·2	6·7	11·6
Midlands ..	12·7	6·6	3·6	9·3	9·3	13·3	6·7	4·2	10·0	11·2
North-East ..	19·4	13·5	8·1	7·3	13·7	21·9	16·4	10·6	10·4	20·7
North-West ..	17·9	14·3	5·8	8·1	13·3	22·1	19·4	9·2	14·2	19·7
Scotland ..	15·0	11·2	8·6	9·3	12·1	22·1	19·1	11·3	12·5	21·3
Wales	26·8	14·1	8·0	9·8	19·3	33·9	27·4	20·8	20·6	31·2
Great Britain and N. Ireland ..	13·3	9·7	4·6	7·1	10·4	16·7	12·7	6·5	8·5	15·6

in 1935, a decline of nearly 18 per cent. These figures reflect the exceptionally low birth-rates of the war years; 1936 will almost certainly show a rise from 1935. But the rise will be temporary only. The changing age constitution of the population, through the falling birth-rate, stands out clearly in the statistics of insurance.

The fall of the birth-rate has affected both sexes equally. The relatively smaller decline of girls than of boys in insurance, as shown in Table VI, presumably reflects an increasing tendency of girls to take insured employment. By way of contrast, it may be noted that men in insured work have increased proportionately more than women, by 880,000 or 11 per cent. of the 1929 figure, as compared with 258,000 or 9 per cent. for women. This, as well as the inflation of the figures for women in 1931 and 1932, is probably in part a reflection of the changes of the insurance scheme described above.

Table V covers all insured persons. Similar figures can be prepared for men, women, boys and girls separately. For boys and for girls, the contrast between the prosperous and unprosperous regions is even more marked than in the total figures. In South Britain the unemployment percentage among boys was 1.9 in 1929 and is now 2.2. In the North and Wales it was 4.0 in 1929 and is now 8.5. The contrast between particular Divisions is yet more emphatic. In London, the percentage has been 1.7 in each of the last three years—presumably an irreducible minimum, due to delay in fitting boys to their best careers, and accompanied by a large unsatisfied demand for juvenile labour. In Wales, the latest percentage is 12.5, one in eight of all boys of 16 and 17. For girls the comparison is much the same. To young people growing up, the world must seem a very different place, in London and in Wales; in one region calling insistently for their service, in another keeping them at arms length and with little use for them.

The Northern Divisions and Wales are those in which the depressed staple industries of Britain—coal mining, shipbuilding, textiles and heavy metals—are concentrated. But in these Divisions severe unemployment is not confined to the depressed industries. It extends, so far as can be seen, to all or most industries. For building and several branches of engineering, the Ministry of Labour publish each month unemployment percentages by Divisions. Table VII shows the mean percentages for 1929 and 1935 in building, general engineering, electrical engineering, motor vehicles, cycles and aircraft, with the general percentages covering all industries. With minor variations, the figures for each of these prosperous industries present much the same picture in 1935 as that for all insured persons. The four Southern Divisions in each industry have markedly less than the average unemployment of Great Britain and Northern Ireland; the three Northern Divisions as a rule come fairly close together with two or more times as much unemployment as the South; Wales is conspicuously worse off than any other region, with 20 per cent. and more of unemployment even in the most prosperous industries. The most marked variations from the general picture are the relatively high unemployment shown by motor vehicle making in the Midlands and by building in London. In the former case there appears to be a severe seasonal fluctuation with a slack period from July to September. In building, the system of employment on short jobs makes unemployment high even in prosperous times and regions.

The foregoing comments relate to 1935. The relative positions in 1929 are not materially different, though the general level of unemployment is lower. The industry which in 1935 has most nearly recovered the 1929 position is the manufacture and repair of motor vehicles, cycles and aircraft. But, in Wales, unemployment even in this industry has doubled.

The administrative Divisions of the Ministry are large areas with considerable variety of conditions within them. Statistics for smaller areas are not published regularly, but for one recent month—March, 1936—the normal monthly return of unemployment has been tabulated to yield separate unemployment percentages for each of the counties in England and most of those in Scotland. From this it appears that prosperous Divisions like the South-East or South-West, with several counties below 6 per cent., have areas of relatively high unemployment—in Norfolk, Suffolk, Cornwall, Devon and Gloucester.

The mean percentage for the whole of Britain on the day of the return was 14.3. In Table VIII on pages 384 and 385 the counties are arranged in groups having less than half this mean rate of unemployment, between half and three-quarters, between three-quarters and the mean, and so on. Over

TABLE VIII

UNEMPLOYMENT BY COUNTIES IN MARCH, 1936

Counties having less than half average for Great Britain	Insured Persons	Unemployed		Percentage of Unemployed claiming benefit
		Number	Percentage	
Bedford	71,490	2,946	4.1	66.3
Middlesex	536,530	27,638	5.2	64.2
Hertford	88,330	4,821	5.5	57.6
Bucks	61,110	3,500	5.7	67.3
Wilts	58,620	3,316	5.7	65.0
Surrey	238,430	14,279	6.0	65.3
Warwick	558,510	34,467	6.2	57.0
Sussex	145,580	9,753	6.7	65.7
	1,758,600	100,720	5.7	61.9
50 and less than 75 per cent. average				
Westmorland	10,520	771	7.3	66.0
Oxford	45,180	3,395	7.5	79.1
Leicester	191,800	14,387	7.5	65.8
Northampton	108,880	8,872	8.2	57.1
Berks	65,490	5,536	8.5	65.0
Kent	273,590	23,584	8.6	65.5
Hunts	5,580	488	8.7	66.2
Cambridge	31,430	2,782	8.8	68.8
London	1,455,290	133,329	9.2	62.4
Essex	464,460	44,167	9.5	62.8
Somerset	94,670	9,118	9.6	59.8
Derby	237,270	23,997	10.1	46.9
Worcester	113,460	11,503	10.1	62.5
Hants	238,730	24,388	10.2	66.3
	3,336,350	306,317	9.2	62.0
75 per cent. and less than average				
Dorset	39,300	4,057	10.3	79.4
Suffolk	72,970	8,612	11.8	64.1
Devon	134,120	16,361	12.2	58.7
Gloucester	204,000	25,051	12.3	51.9
Notts	223,690	28,127	12.6	41.7
Perthshire	21,860	2,853	13.1	52.6
Stafford	476,470	63,190	13.3	53.6
Lincoln	120,090	16,688	13.9	54.5
Yorks	1,330,470	187,990	14.1	48.8
	2,622,970	352,929	13.5	50.8
Average and < 125 per cent. of average				
Hereford	14,150	2,031	14.4	54.2
Salop	43,170	6,289	14.6	56.4
Fife	76,570	11,240	14.7	40.2
Midlothian	161,170	24,001	14.9	45.9
Cheshire	257,050	39,304	15.3	48.4
Norfolk	95,740	14,713	15.4	58.5
Stirling	48,870	7,957	16.3	53.5
Rutland	980	162	16.5	52.5
Cornwall	53,790	9,257	17.2	60.5
Ayr	80,910	13,973	17.3	39.0
	832,400	128,927	15.5	49.0

TABLE VIII (*continued*).—UNEMPLOYMENT BY COUNTIES IN MARCH, 1936

125 and < 150 per cent. of average	Insured Persons	Unemployed		Percentage of Unemployed claiming benefit
		Number	Percentage	
Aberdeen	72,510	13,061	18.0	53.6
Lancashire	1,791,850	328,692	18.3	45.3
Renfrew	89,600	17,844	19.9	28.3
Northumberland	225,560	45,476	20.2	32.1
Dumbarton	43,750	9,288	21.2	31.6
	2,223,270	414,361	18.6	43.0
150 per cent. and < 175 per cent. of average				
Rest of Scotland	151,330	33,475	22.1	57.4
Angus	86,150	19,366	22.5	39.8
Lanark	522,790	122,715	23.5	30.8
	760,270	175,556	23.1	36.9
175 per cent. and < twice of average				
Durham	419,380	114,028	27.2	27.2
Cumberland	59,540	16,637	27.9	40.3
	478,920	130,665	27.3	28.9
More than twice average				
Wales	618,180	201,457	32.6	38.2

5,000,000 persons—two-fifths of the whole—are in counties with unemployment rates ranging from 4.1 to 10.2, that is to say, more than 25 per cent. below the mean of 14.3. Nearly 3,500,000 are in counties with unemployment rates ranging from 10.3 to 17.3, that is to say, between 25 per cent. below and 25 per cent. above the mean. Over 4,000,000 are in counties with rates more than 25 per cent. above the mean, and ranging from 18.0 in Aberdeen to 32.6 in Wales. The mining and shipbuilding counties are naturally those with the highest rates. Apart from these, counties, like Norfolk, Rutland, Devon, Salop, and Hereford, which are solely or mainly agricultural, have unemployment rates above the general levels of their respective Divisions. It is, perhaps, for this reason that all the counties of Scotland which are shown separately and also the rest of Scotland, comprising all the non-industrial counties, show high unemployment. Nearly the whole of Scotland appears in these figures as a depressed area, though the depression is less deep than in Wales or the worst sections of Northern England.

In Great Britain, as a whole, the proportion of the total unemployment covered by benefit in March, 1936, is 47.1 per cent. In the prosperous counties, with unemployment less than three-quarters of the mean, the proportion covered by benefit is naturally higher, and in most cases is between 62 and 66 per cent. The average for all these counties is 62.0; Oxford shows an exceptionally high proportion and Derby an exceptionally low one. In the middle groups, with unemployment from 25 per cent. below to 25 per cent. above the general level, the proportion covered by benefit is lower, but more variable; the averages for these two groups are just below 50 per cent. In the counties of high unemployment the proportion covered by benefit is markedly less, falling to 28.3 in Renfrew and 27.2 in Durham.

Regional differences of unemployment will be considered again, from a different angle, in the next section of this analysis: by duration. Meanwhile, the persistence of widely different levels of unemployment in different parts of the country reinforces the moral of the last section; in showing how small is the fluidity of labour, it suggests how unsuitable a subject is unemployment for abstract theorising in general terms. Perhaps the most striking result is that of Table VII, showing that local differences of levels are as marked in the progressing as in the depressed industries: South Britain, North Britain and Wales appear almost as uncommunicating worlds, with separate fates.

(The second part of this article, examining Unemployment by duration, age and sex, with a summary of conclusions, will appear in the February issue.)

Taxation of Savings

By D. H. Macgregor

I

The opinion that, under a proportional income tax, savings are taxed at nearly twice the rate at which expenditure is taxed, was first expressed by Stuart Mill, who did not refer it to anyone before him.

His statement in the *Principles* virtually includes the formula which is later expressed by Professor Pigou. Mill says:

> "Unless savings are exempted, the contributors are twice taxed on what they save, and only once on what they spend. . . . In addition to the 3 per cent. which he has paid on the principal, (the taxpayer) pays 3 per cent. annually on the interest, which is equivalent to an immediate payment of a second 3 per cent. on the principal, . . . or, more correctly, 3 per cent. on the whole, and another 3 per cent. on the remaining 97."

This gives the formula that, if R per cent. is the rate of taxation on the whole income, expenditure pays R per cent. once for all, while savings pay R per cent. immediately, and another R per cent. on the $\left(1-\frac{R}{100}\right)$ to which they are reduced, or in all $\left(2-\frac{R}{100}\right)$ times R per cent.

This proposition, if true, is very important. For, if the income tax is not merely proportional, but is imposed at a higher rate on the income from investment, then there is a threefold burden on savings, not to mention the death duties. Capital must be anything but timid, if it accumulates in face of these obstacles.

Yet the proposition is not even discussed, so far as I can discover, by the following writers on taxation—Professors Edgworth and Seligman, Wagner, Plehn, Dr. Dalton, McCulloch, Sidgwick, Professor Shirras, Flux; nor, in the sense in which Mill intends it, by Fawcett or Walker. To all of these except McCulloch Mill's proposition must have been well known.

It is explicitly supported by Marshall, Professors Einaudi, Pigou, Taussig, and Fisher; and explicitly rejected by Nicholson, Bastable, Sir Josiah Stamp, Dr. Pierson, Professor Ricci, Cannan, and de Viti de Marco. The first three of the supporters practically repeat what Mill said, and Marshall enters into no elucidation; Professor Fisher's ground is somewhat different, depending on his special definition of income. The reasons for rejection are much more various, especially in the case of Dr. Pierson, Professor Ricci, and de Viti de Marco.

Mill presented his proposition before the Committees on the Income Tax of 1851-2 and 1861. In the former years, there were three Chancellors to hear it—Wood, Lowe and Disraeli; in the latter, he had an interesting argument with Gladstone. None of these accepted his proposition.

Mill was influenced by the discussions, which had been continuous since 1842, on the incidence of the income tax on permanent, temporary, and precarious incomes. It was held that the incidence was unequal in many ways, but especially because, the more an income was temporary or precarious, the more necessary it was for the receiver of that income to save against the future. Mill denied that a temporary income, merely as such, was unequally taxed, because the tax was also temporary; and the same consideration would apply to precarious business incomes. But he agreed that the necessity to save was a difference which created an inequality in the tax from the standpoint of sacrifice. He rejected Hume's idea that the income tax should be converted into a property tax, by capitalising incomes on the basis of their size and sources, and the lifetime of the individual.

In these circumstances, he advocated the exemption of savings from assessment. He thought that the ideal tax would exempt actual savings, if it could also be so administered as to overcome the evasion of those who disinvested their savings later, and spent them. This would mean a tax on all expenditure, whether of income or capital. His idea was that the more permanent an income was in respect of its source, the less the individual would need to save, and therefore the less he would save; so that he would benefit least by the exemption of savings. If actual savings could not be assessed, he proposed as a compromise to exempt an estimated amount of savings which the individual ought to make, according to the nature of his income. In effect, he would tax professional (or life) incomes, and precarious (or business) incomes at lower rates than incomes from permanent assets, by giving exemption of a certain proportion of assumed savings. It was in the course of that argument that he pointed out that, as a " mere matter of arithmetic ", savings were always twice and nearly doubly taxed.

Although Mill does not refer his proposition to any previous authority, there are indications that, in the prolonged public discussion of the inequalities of the income tax since 1842, the idea had got about. Thus Lord Brougham had said, on the Budget of 1842, that

> " Though there is capital invested (in a new enterprise) and no return is really made by income, except as to the profits, the whole, capital profits and all, is brought within the income tax and made to pay."

In the same year, Mr. C. Buller objected that " that portion of his annual gains which a professional man was compelled to put by was to be taxed at the same rate as that which he was compelled to spend. This was taxing the capital of the professional man, while you only taxed the income from realised property."

These statements, which contain the germ of Mill's idea, are prior to the publication of his *Principles*. It had been held earlier by Hobbes, Arthur Young, and Petty that an expenditure tax was the fairest, a statement repeated and underlined by Mill. It seems also not unlikely that Hume and Hubbard, who were the public protagonists against the alleged inequities of the income tax, had something of the sort in their minds when they urged the capitalisation of the tax.

Mill's special argument made no impression on public men. Gladstone made a brief reference to it in the Budget speech of 1853, when he said :

> " There is a general feeling that a man ought to have at any rate the opportunity of investing the savings he may make from his income without being liable to income tax upon them. We do not think it is possible to make provision of that sort applicable to savings simply as such."

The most direct reference to the question in public discussion occurs in the Resolution on the Income Tax proposed in 1862 by Mr. Hubbard, who had been chiefly responsible for the Committees of 1851 and 1861–2. At that time savings were exempt, if applied to insurance, up to one-sixth of the income. Mr. Hubbard said:

> "Take for instance the question of exempting savings from income tax. The Legislature had determined that, if a person invested a certain proportion of his income in a life policy, it should be exempted from the tax, because the portion so invested was not income at all. That was his case. Withdraw the absurd and ridiculous limitation as to the mode of investment, and increase the proportion from one-sixth to one-third, and do not limit it to money invested in life assurance, and he was satisfied."

Not until 1918, when capital levies were being discussed, do I find any further reference[1] to the idea in Budget debates, though the inequity of the income tax was a constant theme, almost a hardy annual. It is now practically one of the economists' "unsettled questions". The earliest reference is by Hobbes:

> "The equality of imposition consisteth rather in the equality of that which is consumed, than of the riches of the persons that consume the same. For what reason is there, that he which laboureth much, and sparing the fruits of his labour, consumeth little, should be more charged than he that liveth idly, getteth little, and spendeth all he gets; seeing the one hath no more protection from the Commonwealth than the other? But when the impositions are laid upon those things which men consume, every man payeth equally for what he useth: nor is the Commonwealth defrauded by the luxurious waste of private men." (*Leviathan*: Ch. 30.)

II

I confess to surprise that such a question should remain unsettled, because Mill's proposition, and the formula to which it has been reduced by Professor Pigou, very strongly suggest some obvious answers. Before entering on any more intricate questions, these may first be stated. They are two in number.

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[1] By Mr. S. Arnold.

First, Mill says that if a tax of R per cent. is imposed on an income, part of which is going to be saved, the result will be that the taxpayer will reduce both his expenditure and his savings by exactly R per cent. This assumption is *essential* to his argument.

But no such assumption can for a moment be allowed. It is a confusion between two quite different things—assessment and levy, or between the basis of a tax and its source. The assumption is that, because every pound of income is equally assessed, whatever use it is put to, therefore every use of income is equally levied upon. The government can assess, but it is the taxpayer himself who levies, and he does this on an estimate of his valuations of present and future income, as affected by the whole tax. If an income of £1,000 is assessed at £100 of taxation, he may take not £50 but £80 out of expenditure, and only £20 out of savings. Why not? It is a question of his elasticities of demand, and marginal valuations. It will vary with different taxpayers. Mill's arithmetic is too simple. I do not understand why none of his critics has pointed out this obvious and quite disqualifying objection to his formula, which is thereby at once dissolved. Assessment is not the same thing as levy. Marshall, indeed, as well as others, has held that a fall in future interest might cause a person to save more than before; and this for reasons which make it not impossible, even if present expenditure is also taxed. But if savings may be actually increased, the argument cannot go a step further; nor even if they are reduced much less than expenditure.

Is any general argument capable of being framed to prove that a tax on income, or an increased tax, must cause savings to be reduced by at least as much as expenditure?—either for incomes of all sizes, or as an aggregate result? Such a proof is at least necessary, but it has not been even offered, nor has any defence been made of the usual assumption.

If we grant provisionally that savings are subject to a double *process* of taxation, a direct one, and an indirect one, through the dividends, this does not prove a double *rate* of taxation. However the taxpayer reacts, we may provisionally grant the double *process*.

He may be supposed to react by reducing savings and expenditure in such proportions that the single process on expenditure comes to the same proportion of expenditure as does the double process on savings, of savings. That is to say, if savings (S) are reduced by A per cent., and expenditure (E) by B per cent., and if R is the rate of taxation per cent., then on this assumption he reacts so that

$$\frac{B}{100} = \frac{A}{100} + \frac{R}{100}\left(1 - \frac{A}{100}\right).$$

It will be found that A and B are both equal to R only if R = 0, or 100. Between these limits, B will always be greater and A less than R. The government does not tax the savings, it only taxes the income; and the taxpayer will react so that, in his own estimation, one use of his income does not bear a greater burden than the other.

But he is more likely to react so as to maintain a marginal equivalence between savings and expenditure, such as already existed at the ratio of S to E before the tax. In that case, on the provisional assumptions of the formula, that (S + E) is the present value of the whole income under review, it will be plain from a diagram that he will make

$$\frac{B}{100} = \left\{\frac{A}{100} + \frac{R}{100}\left(1 - \frac{A}{100}\right)\right\} \times \frac{e_2}{e_1}$$

where e_1 and e_2 are the pre-tax elasticities of demand for savings and expenditure respectively. Then B is greater or less than R according as R is less or greater than $100\left(2 - \frac{e_1}{e_2}\right)$, and A will be negative, (savings will increase), if $\frac{e_1}{e_2}$ is less than $\frac{E}{S + E}$, and R less than 100.

Thus A and B are not generally equal to R. This is fatal to the argument as usually expressed.

Reference has been made to a provisional assumption of the argument; namely, that the whole income under review, brought back to a present sum, is (S + E), since S is the capital value of its future dividends. S has to do for both a present and a future income. This must now be considered.

III

The criticisms of Dr. Pierson, Bastable, and Sir Josiah Stamp turn on this point, but in different ways.

Bastable, for example, says :

> "The wealth which is taxed as income is not identical with the extra produce that is the result of its application, and the charge on each is distinct. The income out of which savings are made cannot be the same as the subsequent income produced by these savings."[1]

It was the line taken by Babbage, before the Committee of 1852—that each year had to answer for its own income. The more penetrating analysis of de Viti de Marco will be considered below. I wish here only to point out how Mill's formula leaves unanswered a serious inference from it.

That inference is that the government must be getting more taxation than it requires. For, if the rate of taxation is R per cent., and this represents the cost of the public services, then R per cent. of the expenditure, plus nearly twice that proportion of the savings, is more than R per cent. of the whole income. There is therefore something to examine in the assumptions.

I see no escape from an impossible conclusion, so long as we adhere to what Mill and other supporters of his argument actually say. They say explicitly that the rate of immediate levy on both savings and expenditure is equal to the rate of tax on the whole income, and then that savings, which are capitalised as a part of that income, pay something more.

It would be necessary to help the formula out by suggesting that, because of the double tax on savings, the rate R is reduced, so that the whole public revenue comes to a net result of R per cent. by a double process on savings.

But this amendment is not possible, because the government, by the assumptions, requires R per cent. of the income each year ; both in the year when savings are made, and afterwards. It cannot reduce the rate and pay its way. But, if the rate stands at R, it gets more than it requires.

Let us begin by supposing a year in which savings are first made. The income is a sum of money equal to S, the savings, and E the expenditure. The savings will give a future income in interest. But Mill's assumption is that the future income is already allowed for in S, as a capital sum. So that (S + E) is the whole income, at present values, under the review of the argument. And, as the government must get R per cent. of (S + E), and also R per cent. of the interest of S—that is, of S itself as a capital—it must get more than R per cent. all over. It is plain that the income must have been wrongly estimated. We only get R per cent. all over if the interest on S is treated as an additional income; that is, if the whole income, brought back to the present, is (S + E) plus $S\left(1-\frac{A}{100}\right)$, where A is the first year's levy upon S. The whole present value of the taxation is R per cent. of (S + E), the present income, plus R per cent. of the future income of S when it has become a capital, i.e. of $S\left(1-\frac{A}{100}\right)/\left(1+k\right)$, where k is the rate of discount, for the income does not begin to run till after one year. Then, if B is the levy on expenditure, we have

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[1] *Public Finance*, 3. 3. 12.

$$\frac{B}{100}E+\frac{A}{100}S+\frac{R}{100}\left(1-\frac{A}{100}\right).\frac{S}{(1+k)}$$

as the whole taxation, upon the whole income, brought back also to the present, which is

$$E+S+\left(1-\frac{A}{100}\right)\frac{S}{1+k}$$

and the ratio of these is $\frac{R}{100}$, since

$$R=\frac{AS+BE}{S+E},$$

which is as it should be.

In other words, Mill created the impossible condition, that the government gets more taxes than it wants, by treating part of the first year's income, S, as both a capital and an income in that same year. This is Dr. Pierson's criticism, though otherwise applied; and it is in effect the criticism of Sir Josiah Stamp and Bastable, when they hold that the income of the savings is a new income, due to a "new application" of resources. It is also the point of the contention that it is not double taxation to pay two taxes for two services. Savings receive services in the year when they are made, and further services in the year when they are applied, and these two orders of services are represented in the two taxes on two incomes, not on one income. This is the essence of de Viti de Marco's criticism, that you cannot complain of paying for the services which the State has rendered to the creation of savings, for the reason that you will also have to pay later for the services it will render to the use of savings. Thus all these lines of criticism converge, and their point can be expressed in different ways—either, that there are different incomes and different services, or that the same money is not both capital and income in the same year, or that the State cannot be supposed to get more taxation than it is using.

Another illustration may be given. We are supposing an income $(E + S)$ which as yet includes no capital, but is used by the community while they are making the capital S. The value of S will be equal to the income of those engaged in making the capital. But it is not a capital in this year; if it were, it would have a dividend, and the income would be greater than $(E + S)$. We are necessarily speaking of yearly periods. To call it a capital is a proleptic fallacy, as when we say that a man first met his wife a year before they were married.

Mill stated his argument in another form when he said:

> "The principal and the interest cannot both form part of his resources; they are the same portion twice counted; if he has the interest, it is because he abstains from using the principal; if he spends the principal, he does not receive the interest. Yet, because he can do either, he is taxed as if he could do both, and could have the benefit of the saving and of the spending concurrently."

This is true after the savings have been made. It does not make savings capital in the year when they are created. If their future income is capitalised back to a year before they existed, that capital value will count as an addition to the resources of that year, and will not be included in its income.

IV

How would the exemption of savings affect Mill's formula, and the corrected formula?

On Mill's formula, assessment and levy are the same. In the year of impact, the rate on spent income would become $R . \frac{S + E}{E}$ per cent., and in succeeding years a rate of R per cent. would fall on the new income from savings, as well as on the remaining (S + E) of expenditure. This would be a discrimination against expenditure. Alternatively, if the exemption were given to the dividend of saving, expenditure and savings would both be taxed R per cent. in the year of impact, and the expenditure of non-savers would subsequently be taxed at $R \cdot \frac{S + E + D}{S + E}$ per cent., where D is the new income from dividends.

The discrimination against expenditure which would thus result follows from the fact that the tax is proportional each year. The income from the savings does not reduce the rate of taxation when it accrues, as it would if the tax were a fixed annual sum. The State requires R per cent. of the money income each year.

When the reactions are allowed for, the levy and assessment are different. The exemption from assessment does not mean that there is no levy on savings. By the individual taxpayer, his entire tax, however assessed, will be distributed so as to make the levies equivalent. As between different taxpayers, the exemption of savings, since it will increase the rate of taxation on spent income, will discriminate against those who are least able to obtain equilibrium by reducing expenditure relatively to savings. Because, in the year of impact, they will pay the increased rate on a relatively large part of their incomes, and in future years, having saved a relatively small proportion, they will pay the ordinary rate of taxation on a relatively small part of the whole income under review. As the large savers are the rich, this would give them an unwise preference. Mill was compelled to admit this, in reply to Gladstone, who made it the main point of his criticism.

V

There is a minor point which may be noted here. The levy which is made on his savings by the taxpayer in the first year is a genuine reduction of the amount of saving. But what of the subsequent assessment on the dividends? We cannot add a levy to an assessment, unless it is granted that the latter will also cause a genuine reduction in the capital value of the savings. Now this can by no means be granted, if a general tax is laid on all dividends. Different kinds of capital may be affected as compared with each other, but we are discussing savings as a whole. Are capital values reduced by the way in which the dividend is spent, when services are received for it? This was denied by Farr and Newmarch before the Committee of 1861, as I think rightly. It will be later seen how Ricci dealt with this point, as a question of real interest. It is true that a tax on capital can be regarded as compounded for, but then the services are received free; and, as the amount given to the government pays no dividend, the whole value of the public services is simply absorbed by the private capital which remains. A certificate of exemption from so much income tax, in other words, is an asset which is to be capitalised. And other expenditures out of dividends, such as necessaries of life, are nearly as compulsory as taxation.

Besides, if the future assessment on dividends is to be regarded as a second levy on the capital, this effect would fall only upon old investments. For new savings would then buy an amount of old investment that would have fallen in price, so that these savings would pay no real second tax. And new investment would have to adjust itself to this condition. This is pointed out by Professor Ricci.

This line of thought would lead to a new casting of the argument, in which the public services would have to be counted as income. Then the first levy on savings would mean a change in expenditure, and the subsequent assessment of dividends would be merely expenditure. From the national point of view, whether this discriminated against saving would depend on how the government applied the money. From the taxpayer's point of view, the first levy is made by himself, and might be great or small or negative, according to his reaction to taxation and its benefits. This new line of argument need not be pursued here.

VI

This naturally brings us to Professor Fisher's way of stating the argument. It is not quite the same as Mill's. He does not confuse an assessment with a levy. His point of departure is his theory of income, which he identifies with final consumption of goods and services. Savings are then not income, by definition, and therefore an income tax should exempt them. Savings are only the capitalised expression of future income, and are doubly taxed if both they and their income are assessed.

If a capital sum of £20,000 represents an income in perpetuity of £1,000 a year of consumable goods, that present value, he holds, cannot be increased by any future acts of saving, so long as the rate of interest remains at 5 per cent. If, in the first year, £500 is saved, it will give an extra income in future years of £25. Then the series of incomes is £500, and £1,025 for ever, which is equal to a present value of £20,000. But if we say that the series of incomes is £1,000, and £1,025 for ever, we have inflated the capital value beyond what is given. Therefore, if we tax this second series, we have taxed the savings twice.

The inflation, for purposes of taxation, of what on other principles is strictly income, is not in itself an inequitable proceeding. It is done in respect of the interest on the national debt, which is not income from every point of view. But it has to be treated as taxable income, because the fund-holders have rendered services to themselves and each other, as well as to the rest of the nation. The equity of taxation is obtained only by this roundabout method of assessment.

In the sphere of taxation, we have to use the concept of income which is relevant to that of the public expense. The State enables saving both to take place and to give a future income. It is therefore the second of the above income series which is relevant. If then the savings are exempt in the year when they are made, they will pay tax on £25 in perpetuity. Expenditure will pay on £1,000 in perpetuity, but against an income which is only £500 in the first year; and this will discriminate against expenditure.

The two processes to which savings appear to be subject are only due to the keeping of annual accounts. In fact, the income from saving is obtained simply by a longer process than that from expenditure, but this is split up by annual budgeting so that it looks like a double incidence. Long processes necessarily incur a greater public charge than short ones, and the results of long and short processes have to find their equilibrium, just as in the case of hand and machine-made goods, which have labour charges of different duration. There is no reason for placing upon expenditure part of the costs of producing savings; these should pay their own charges.

In his evidence in 1861, Mill said:

> "Supposing there were a tax on stockings, intended to be 10 per cent., if a tax were also levied upon the machines by which they were made, will not the stockings be in reality taxed 20 per cent?"

On the new assumption of a general system of indirect taxation, this is correct, and machine-made stockings will include more taxes, as they also include more labour, than hand-made ones. If machines are exempt, the stockings made by them will still bear a higher tax than 10 per cent., but will throw some of the extra charge on hand-made ones, and, although on other grounds this system of taxation may be objected to, there is no reason why the products of a single process should pay part of the costs of the products of a double process of production.

Mr. Lowe asked Mill:

> "You tax the father and you tax the son, and you say that taxing the son is taxing the father twice?"

To use another analogy—if I pay a shilling at the gate to see a football match, and another shilling to go into the stand, do I pay twice *to see* the match, because this is my final income?

Of course, there would be an answer, if the income tax fell on all final income in Professor Fisher's sense—that is, if dissavings were made taxable. Mill perceived that this would be necessary. But this is evaded when the income from savings is considered in perpetuity—then the compensation does not exist, for it is postponed to infinity, while the tax requirements are unaffected. And it is to this latter system of taxation that the argument is applied.

Mr. Lowe, in his draft Report to the Committee of 1861 summed up as follows:

> "The portion of an income which is saved is received just as much under the protection of the State as the proportion which is spent. The Income Tax is a supplement, not a substitute, for indirect taxation; and it is therefore not a defect but a merit that it should reach a portion of the income which cannot be reached by indirect taxation, whose incidence cannot reach beyond consumption and expenditure. It is no part of the duty

> of the government to give bounties to saving or to lay penalties on expenditure. The State cannot put itself in the position of individuals, and judge for them (how much to spend). There is a vice of saving as well as of spending. . . . Saving implies something to spare. . . . To give a remission to savings is to give a remission to wealth. . . . The general claim of savings to a remission cannot be supported."

VII

As has been said, the support given to the theory does not go beyond Mill's own expression. Marshall says simply that the income tax " presses unduly on those who do not spend the whole of their incomes, but save some of it; they are taxed on their savings, and they are taxed again on the revenue derived from their savings."[1] I do not know how this is to be taken; whether as meaning double levy, or double assessment, or levy and assessment. It is not elucidated.

There is no doubt that Professor Einaudi means a double levy, and that the first levy is equal to the first assessment on the whole income; the second levy is due to the assessment of the dividends. His figures are quite explicit.[2]

But one of Mill's critics has also passed the main assumption, that the general rate of assessment on income is identical with the rate of levy on savings and expenditure. In his reply to Professor Einaudi, Professor Ricci accepts the first levy, but argues away the second. As I think this is a wrong line of criticism, his argument may be here considered.[3]

He says that the income tax will never affect the proportions of income which are spent or saved. For it will, in the first instance, diminish by the same percentage (the rate of income assessment) the savings and the expenditure; and then the subsequent tax on dividends, being a general tax, will act in the same way as a real reduction in the rate of interest. But in that case it will increase the multiplier for capitalisation in just the proportion in which it is laid on the dividends, so that the capital value of the savings will not be affected by it.

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[1] *Official Papers*, p. 338.
[2] *Corso di Scienza della Finanza*, pp. 174 *et seq.*
[3] *Revue d'Economie Politique*, 1927.

A tax of 10 per cent. is laid on an income of £1,000, of which half is saved. Savings and expenditure, it is supposed, will both be at once reduced to £450. The tax on the dividends further reduces the savings to £405. But, as it is a general tax, it is the same as a fall in interest by one-tenth. Then the multiplier for capitalisation has increased in the ratio of 10 to 9, which is the ratio in which dividends have fallen; and ten-ninths of 405 is 450. There is therefore no second levy.

This line of reply starts from what I have contended to be a wrong major premiss, and the further step also appears to me not to be valid. It takes us into a field of questions concerning the real rate of interest, and the rate of real interest, and it is a sample of these questions.

The real rate of interest is less than the nominal rate by the amount of any charges incurred in getting the interest; for instance, the conditions of exchange, in case of a foreign investment. But it is not reduced by the fact that part of the interest has to be spent in a certain way, especially if that is in return for services. The taxation of interest is a charge for spending, and there are other charges, such as the cost of necessaries, which are nearly as compulsory; and it is not transferred to the other category by the fact that it is usually deducted before the interest is paid. There must, in other words, be a difference between a sheer reduction of interest and a reduction which is accompanied by a receipt for income tax. The latter is a discharge of a liability which has somehow to be met, and is, in this reference, a capitalisable asset.

A rise in the cost of the public services, as of other prices, might be considered a fall in the rate of real interest on savings. For reasons which cannot be gone into here, I differ from the view that the value and price of money can be added together in this way to yield a new interest rate.

For these reasons, the reply of Professor Ricci does not seem to me to take the right line, apart from the initial assumption which he concedes to Mill.

VIII

Dr. Pierson puts his finger on the fact that Mill treats the same sum of money as income and capital in the same year. Mill must choose, he says, on which leg he is going to stand. If the tax on the future dividend is an indirect tax on this year's capital, then this year's taxation falls indirectly on some previous capital; but Mill makes it fall on this year's capital. Either each year's taxation is to be referred back as a once-for-all tax on a previous capital, or it is a once-for-all tax on its own year's income. Either capital is once taxed, or income is once taxed; but not both.[1]

To this ingenious argument I think it is open to the theory to reply that it buries the problem in that of the beginning of a continuous process. This can be seen in another way. For the exemption of savings might mean either the exemption of the new savings, or the exemption of the future dividends. In this country, savings have been round about one-sixth of the income, while income from property has been about one-third. It would make a great difference, therefore, which we began to exempt; because we would be starting in the middle of a long development. If, for clearness of argument, we start from an income solely derived from work, into which savings are then introduced, is there a formal answer to Mill's assumption that the initial capital is taxed by two processes—one when it is saved, and another in the future—and that every successive capital is in the same position?

Besides, Dr. Pierson's argument supposes all income to be derived from previous capital, if we go far enough back, and this seems to introduce too large an element of conundrum.

IX

In what has been said above, provisional assumptions have been allowed to pass. The formula has been discussed on its own basis. The words savings and capital have been used as Mill used them, as if the taxation fell on certain results of the income process. But I now turn to the more fundamental criticisms of de Viti de Marco.[2] When we say that savings ought to pay their own taxes every year, no less than expenditure, what is the analysis of income that is behind this view?

It has been said above that, when we consider annual periods, and say that so much of the income is saved, this use of words is proleptic. The capital does not exist till the end of the year, and is not operated till next year. Strictly speaking, therefore, the public services have not been rendered to the capital. They have been rendered to the act of saving, which makes capital possible.

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[1] *Principles*, Part 4, Ch. 3.

[2] *Principii di Economia Finanzaria*, pp. 122 *et seq.*

It is on the two activities of work and saving that the national income depends. A levy on saving means that there is less of that activity, and less capital is therefore created. A tax means that some work and some saving must be done on behalf of the government; in this sense, it comes " out of " the whole resources of work and saving. But the saving of this year is a current activity of the year, represented in the national income by the value of its product, capital. That activity can never be taxed again. In future years, the yield of work is increased by it, and pays for the services which protect that work.

If I have correctly understood de Viti de Marco's analysis, therefore, the essence of it is that the alternative of saving and expenditure is not the correct one. One of these is an effort, the other is an income. The proper interpretation of taxation is its incidence on efforts, the fact that persons have to make both the main efforts to some extent for the public service. The criterion of this interpretation is that otherwise we do not know whether taxation is the offset of an income or not; for, if the public services are income, the effect of taxation is to increase real expenditure. We obtain a comparison of similars only by considering, not saving and expenditure (an effort and an income), but saving and work. And then taxation is a charge on both of these, for services which are rendered generally to them both, and enable them both to obtain their income. On this analysis, the capital goods which result from saving are merely an " interaction " in the course of income.

In other words, is it the essence of taxation that it takes so much of the " stream " of incomes for public purposes, or so much of the " stream " of efforts and sacrifices? In the former case, we do not know whether taxation is to be regarded as an extension of expenditure or a charge on it; in the latter the idea is clear-cut, that the State makes a charge on all profitable activities for its assistance in making them possible and profitable.

Banking Policy and the Balance of International Payments

By F. W. Paish

The following observations are based largely on the writer's personal experience in South Africa during a period when that country was undergoing violent fluctuations in her balance of international payments. This experience has led to the belief that, in such a country as South Africa, the process of adjusting an adverse balance of payments differs appreciably from that in such a country as Great Britain. It should be emphasised that attention is here concentrated upon the process of adjustment, and that little or no attempt is made to touch upon its effects. The discussion is mainly concerned with quite short-term problems, and supplements rather than amends the work on long-term problems, such as the effects of given changes upon commodity or factor terms of trade, to which the attention of investigators has hitherto been largely devoted. The time scale used here must be measured in months, or even weeks, rather than in years. Nevertheless, it is hoped that the suggestions here advanced may provide some addition to the equipment of those who are investigating the more important long-term problems; while on the immediately practical side it is hoped to develop this method of approach in such a way as to facilitate the making, in certain conditions and for certain geographical areas, of rather more reliable short-term forecasts of business prospects.

I

Strictly speaking, every receipts and payments account, whether it be the account of a single individual or firm, or the collective account of many individuals and firms, invariably balances; for every pound that has been paid out has been obtained from somewhere. Nevertheless, it is in accordance with the normal use of terms to say of a man whose money reserves have become depleted during the course of a year that his money payments have exceeded his money receipts—that he has, if we care to use the term, an "adverse balance of payments." This adverse balance is, of course, not necessarily inconsistent with an excess of income over expenditure for the same year and with an improving financial position, for the decrease in his money reserves may be equal to only a part of the debts he has paid off or of the new investments he has made during the year. At the same time, it will, generally speaking, indicate some reduction in the liquidity of his position, of which one possible cause may have been an excess of expenditure over income.

In a country where the great bulk of the money reserves of the inhabitants is kept in the form of bank deposits, any excess of an individual's money payments over money receipts is likely to be reflected mainly in a change in the size of his bank balance, for the total of the cheques he draws during the period exceeds that of the deposits which he makes, and his credit balance is thereby reduced or converted into a debit balance, or his debit balance is increased.

What is true of one individual is equally true of a group of individuals inhabiting any given district. If during any period the aggregate amount of the cheques they have drawn exceeds the aggregate value of the amounts they have deposited, it would be possible to say that, as a group, their money payments have exceeded their money receipts, and that collectively they have "an adverse balance of payments." If the group consists of all the customers of a local bank, this excess of payments will be reflected in this bank's accounts by a fall in its total deposits and/or a rise in its total advances. Any disturbance of the equilibrium of the balance of payments of any given district is thus, in a cheque-using community, primarily a banking phenomenon. The purpose of this article is to discuss, under various conditions, the reactions of the banks to this change in their position, and the effects of such reactions.

It is at once obvious that very different amounts of attention are given to the question of the balance of payments in different geographical areas. No one, for instance, seems to take any interest in the balance of payments of

Devonshire, while on the other hand a good deal of interest is taken in the balance of payments of the United Kingdom or Australia. Why is it that the inter-regional balance of payments is regarded as important in one case and unimportant in the other?

The first difference seems to be that the banks in Devonshire are merely branches of large banks whose activities extend over a much wider area. Any excess of withdrawals from Devonshire branches will therefore probably be balanced by an excess of deposits in other branches of the same banks. The only case where this does not hold good is when there is an excess of withdrawals from the system as a whole, due either to an increase in the public's holdings of currency or to a net transfer of funds to outside the system altogether. Apart from this, the chief effect of Devonshire's adverse balance is an increase in the indebtedness of Devonshire branches to other branches of the same banks, or a decrease in the indebtedness of other branches to Devonshire branches. Since banks, generally speaking, have no objection to any amount of inter-branch indebtedness, provided that their total figures for all branches are unaltered and that all advances made are sound, they need take no action to check this process. Indeed, it is well known that certain areas, especially residential areas, habitually lend large amounts to industrial areas through the medium of the banks.

If, however, the banks in Devonshire, instead of being branches of large banks, had been independent banks, or even if some of them had been doing a more important share of the banking business of Devonshire than of the rest of the country, Devonshire's adverse balance of payments would have been reflected in a change in inter-bank indebtedness and not merely in inter-branch indebtedness. Such inter-bank debts, whether in the form of deposits, advances, or re-discounts, would hardly be likely to be allowed to rise to anything like the level customary for inter-branch debts, and unless the movement in due course came to an end of its own accord (for reasons which will be discussed later) the Devonshire banks would sooner or later be obliged to take steps to adjust the position.

The time within which such measures would be thought necessary would probably be greatly shortened if there were also present a second difference which usually exists between national and other regional areas—the difference of currencies. The importance of this difference depends mainly on the degree of possibility of any substantial alteration of the rates of exchange; but if there is even a fairly remote chance of exchange fluctuations, no bank can see with equanimity any large margin between its assets and liabilities in each separate currency. This consideration precludes any considerable amount of inter-bank indebtedness not balanced by other assets or liabilities in the same currencies. It would even preclude the existence of large debts between branches of the same bank operating in two separate currency areas.

The third important difference between national and other geographical areas is the existence of different political controls. This factor is of importance rather for its influence on the type of action likely to be taken to restore the balance of international payments than for determining whether or no some sort of action needs to be taken. If there is a separate government, there is a considerable probability that the action taken to restore equilibrium will be of a non-banking character, and that one or more of the familiar expedients of exchange depreciation or devaluation, restrictions of imports or exchanges, repudiation of foreign debts, and so forth, will be resorted to in order to evade the necessity for banking action. In this article the effects of such measures are not discussed.

II

The immediate effect on the banks in any country of the development of an adverse balance of payments is that there takes place a fall in their local deposits or a rise in their local advances or both. This rise in local assets (other than cash) and/or fall in local liabilities have their counterpart in a depletion of the banking system's reserves of gold and/or of external liquid assets, or, less commonly, in a rise in external liabilities. To the banks, therefore, the problem presents itself as a need of restoring the customary ratio of cash and foreign exchange reserves to deposits, or, which is another way of viewing the same thing, of reducing local assets (other than cash) to their customary ratio to local liabilities. If they are forced to take action, this is therefore in the direction of reducing the total of local advances and/or security holdings.

The exact methods used to attain this end will depend partly on local custom and organisation, partly on the form in which the adverse balance is reflected in the bank statements, and partly on the urgency of the necessary adjustment. The best way of ensuring that the reduced volume of advances was available to those who needed them most would be for the banks to raise interest rates equally on all advances, new and old, until the repayments of loans by old borrowers and the reduced demands of new sufficed to reduce the total of advances and to restore equilibrium by the means and after the delays which will be discussed later.

In some countries, however, a general rise in interest rates usually plays only a part, often a minor one, in bringing about this adjustment. Instead, advances are arbitrarily refused or reduced to particular classes of borrowers, and especially to the whole class of new borrowers. Where the movement is reflected mainly in an increased demand for advances, the restriction of new advances may be sufficient in itself. Where the movement takes the form of a fall in deposits, an actual reduction in advances may be necessary. Even in this case, since a proportion of the advances will normally be paid off each week in the normal course of business, a rigorous restriction of new advances will cause the total of advances to fall steadily. Only in extreme cases, where the total of deposits is falling rapidly, will it be necessary to call up existing advances before their normal date of expiration, or to insist on reductions when they come to be renewed. In this case, when the banks' need to adjust their position is urgent, the advances called up are likely to be those which can be repaid in a hurry, that is to say, the safest and best secured, which in normal times the banks would be best pleased to continue. These measures are tantamount to very large discriminating increases in the rate of interest, for some of those who are refused advances will be obliged to attempt to borrow elsewhere at high rates, while advances not called up continue to pay the old rates.

It may be that, in order to avoid calling up advances, the banks will realise securities. Such action will have a similar effect of depressing security prices, raising long-term interest rates, and probably causing an increased demand for bank advances which must be refused. At the same time, by reducing the market value of securities deposited as cover for existing advances, it will cause the banks to reduce certain overdraft limits. Thus the effect is again that of a rise in bank interest rates, either discriminating or general. In any case, the effect of the banks' reactions to the adverse balance of payments is a rise in interest rates outside the banks.

Hitherto the case considered has been that of a banking system without a central bank. The inclusion of the latter complicates but does not fundamentally alter the position. Instead of the commercial banks holding the whole of the system's reserves of gold and foreign exchange themselves, they hold their cash reserves in the form mainly of notes of, and balances with, the central bank, which in turn holds much of the whole system's reserves of gold and foreign exchange. When an adverse balance develops, it first causes a fall in the public's deposits with, or a rise in their advances from, the commercial banks, and at the same time either a fall in these banks' own reserves of gold or foreign exchange, or a fall in their holdings of the notes or balances of the central bank, accompanied by a fall in the central bank's holdings of gold or foreign exchange. If the whole system wishes to return to its old ratios, both the central and the commercial banks must reduce their local non-cash assets until the position is restored. If, however, the central bank so desires, it can *increase* its local non-cash assets by purchases of local bills or securities at existing prices from the government, the commercial banks, or their customers, thus restoring the commercial banks' balances with the central bank, removing the pressure on the commercial banks, and preventing any tendency for interest rates to rise in order to restore equilibrium. In this case, unless the movement soon comes to an end of its own accord, the central bank's reserves will be increasingly depleted until it may become too late to restore equilibrium by banking measures.

III

In discussing the need for, and the effects of, a rise in interest rates in order to maintain a particular existing exchange standard, it is necessary to take into account three main questions. First, has the balance of payments a tendency to return to equilibrium of its own accord without a rise in interest rates, or will it, if present interest rates are maintained, tend to get progressively further and further out of equilibrium ? Secondly, if there is a tendency to return to equilibrium, either spontaneously or in consequence of a given rise in interest rates, how long will it take for the movement away from equilibrium to be reversed and the position restored ? And thirdly, are the banks' reserves of gold and foreign exchange large enough to fill the gap in the interval, and if not, how much must interest rates be raised in order to effect adjustment before they are too seriously depleted ? No precise answer can of course ever be given in advance to these questions ; nevertheless, it is possible to enumerate certain factors, the consideration of which may enable estimates to be less erroneous than they might have been.

Broadly speaking, an adverse balance of payments tends to adjust itself spontaneously (without a rise in interest rates) when it is due to causes which at the same time cause local business to become less profitable. For instance, if there occurs the failure of an important export crop uncompensated by a rise in the world price, the impact effect will be that exporters, in order to meet maturing liabilities and to maintain their customary standard of living, will draw upon their bank accounts, thus decreasing their credit balances or increasing their overdrafts.[1] If the fall in their incomes is moderate and expected to be purely temporary, exporters may wish to maintain their existing standards of living and scales of production, and will therefore continue to draw from their bank accounts more than they deposit. But if the fall is large and likely to be prolonged, sooner or later they will either see the necessity of curtailing expenditure to correspond, or will be compelled to curtail it owing to the depletion of their bank deposits or overdraft facilities. The exhaustion of unused overdraft facilities may be accelerated by reductions of overdraft limits by the banks in consequence of the deteriorating financial position of the customers concerned.

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[1] During the period during which expenditures of exporters are maintained despite lower incomes, the total of cheques drawn each week on local banks will be maintained while the amounts deposited are reduced, thus reducing the banks' reserves. The position is slightly more complicated where, as is not unlikely in the example under consideration, deposits fall in comparison with the corresponding month of the previous season rather than with the previous month. In this case the banks will look, not only at their current position, but at their probable position after the exporting season is over and the period of seasonal import surpluses has to be faced. The inadequate replenishment of their reserves of foreign exchange during the exporting season may render them unable to finance the former volume of imports during the remainder of the year, and may compel them then to raise interest rates more sharply in order to adjust the position than if the fall in imports had started earlier, while the absolute amount of their foreign reserves was still rising. In other words, banks must use seasonally adjusted figures for the purpose of determining policy.

IV

Assuming a tendency towards adjustment, the period taken for it to become fully effective will depend on how rapidly reduced receipts by exporters are reflected in reduced payments by them, and how rapidly these in turn are reflected in reduced payments to foreigners. If the amount by which exporters' expenditure is reduced would have been, for instance, spent wholly on imported goods, the demand for these will fall off at once, importers will reduce their new orders, and as soon as existing orders have been filled, imports will decline. Thus the fall in the banks' local liabilities or the rise in their local assets will be checked, and the concomitant fall in their foreign reserves will cease or their expansion be stimulated.

If, on the other hand, the exporters' economies are made partly or wholly on locally produced goods or services, adjustment will be a more prolonged process. Other local residents will now be faced with a reduction in their money receipts, and will be able to maintain their expenditures only by reducing their deposits with the banks or increasing their overdrafts. This excess expenditure in turn must come to an end sooner or later, and economies made, again on payments either for local or for imported goods and services. If the latter, adjustment is achieved; if the former, a new set of customers of the local banks tend to decrease deposits and increase overdrafts until they in turn have to economise. This process must continue until the original reduction in exports is reflected in an adequate[1] reduction in the local demand for imports. The length of the process will depend partly on the number of stages needed, which in turn will depend on the distribution of economies between local goods and imports at each stage, and partly on the length of the delay at each stage before reduced receipts are reflected in reduced payments. The first of these questions will be considered in a later section. With regard to the second, the delay at each stage, in the absence of a change in rates of interest, will depend chiefly on the expectations held about the future. If people are optimistic, they will delay curtailing expenditure as long as possible; if they are pessimistic, they will react much more quickly, or may even reduce their expenditure in anticipation of a future fall in receipts. The more optimistic the atmosphere, the slower will be the adjustment. It is however probable that the atmosphere will become progressively less optimistic as the process of adjustment continues, and that the later stages of adjustment will be accomplished more quickly than the earlier ones.

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[1] What will be regarded as an "adequate" reduction in imports will depend upon the attitude which the banks take towards the size of their reserves of gold or foreign exchange. If they are content merely to check their depletion, monthly imports need be reduced only by as much as monthly exports. If, however, they wish to restore their reserves, imports must for a time be reduced more than exports, and only be permitted to recover to their equilibrium level as the banks' reserves approach their former size.

Let us now take an opposite case, where the causes of the adverse balance also bring about, not reduced, but increased profitability of business. Let us suppose, for instance, that increased optimism, or perhaps government loans for public works or armaments, brings about the release of idle balances and a general increase in demand, resulting in an increase in imports, and perhaps a decrease in exports due to the diversion of goods from export to the home consumer. In this case there is no spontaneous tendency towards equilibrium, but rather a progressive disequilibrium. Business is more profitable, business men are more creditworthy, the demand for advances expands at existing rates of interest, not merely temporarily for purposes of distress borrowing, but progressively to finance an increase of business at probably rising prices.[1] Unless some extraneous event occurs, such as a long-term loan from abroad (often the natural solution of the problem), or an internal loss of confidence, due perhaps to an unbalanced budget and fears of higher taxation, advances will continue to rise until the banks' reserves are entirely depleted. To check the movement, they must raise interest rates to a level which will check the further expansion of advances, or even, if they need to replenish their foreign reserves, to one which will induce their repayment. When this occurs, the progress of events will be exactly similar to that described in the previous section, except that since the movement starts in an atmosphere of general optimism, adjustment will probably be very slow in its early stages. It is therefore all the more important that it should be started before the banks' reserves have become seriously depleted.

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[1] It may be noted that in such conditions the effect on the banks' local accounts is rather to cause a rise in advances than a fall in deposits. It is quite probable that deposits will increase, though more slowly than advances.

It is possible to imagine an intermediate case where the adverse balance of payments is accompanied by no effect at all on internal conditions. If, for instance, owners of bank balances which would in any case have remained idle elect to transfer them to other banks abroad, all that happens is that the banks' local deposits and their reserves are equally depleted. The profitability of local business is in no way directly affected, and if the banks have ample reserves they may choose to take no action, for the supply of truly idle balances is limited and if the transfer of balances is carried beyond that limit, local payments are reduced and a depression ensues, which will ultimately tend to correct the position. If, on the other hand, the banks have reason to believe that their reserves will become dangerously depleted, they must raise interest rates in order to restore equilibrium by checking imports.

V

It is now possible to turn to the discussion of the factors which affect the distribution of any reduction in expenditure between imported and locally produced goods and services, and thus in turn help to determine the length of the time-lag between a fall in incomes and a fall in imports. It is clear that one of the most important of these is the relation which exists between the demand for the type of goods imported and the demand for the type produced locally. In a country importing mainly such goods as durable producers' goods and finished consumers' goods of the better qualities—goods for which the demand changes more than in proportion to changes in expenditure—a fall in expenditure will be reflected largely in a reduced demand for imports; it is even possible that there may be a diversion of demand from the more expensive types of goods imported to the cheaper and rougher types made locally, so that the demand for some sorts of locally made goods may actually expand and the profits of their producers be increased. In this type of country the adjustment of the balance of payments through a reduction in imports will be both rapid and effected with comparatively little difficulty or disturbance. There seems to be practically no limit in countries of this type to the amount of adjustment which can be brought about by means of a restriction of bank credit.

With the opposite type of country the position is very different. In a country which imports mainly such things as basic foodstuffs and raw materials, perhaps together with the cheaper types of finished goods, the first impact of reduced expenditure is felt mainly upon the demand for local products, while the demand for certain types of cheap imported goods, other than raw materials, may even increase. Local producers in turn reduce their demand mainly for local goods and services, and the depression in internal markets may continue to spread for a considerable time without seriously diminishing the demand for imports. Thus, apart perhaps from the limited effects of a reduction in stocks, there will be no rapid and direct adjustment of the balance of payments. The adjustment will be slow and probably painful, and when it ultimately comes will take one of two forms. Either the effect of the reduced internal demand will be to reduce factor prices and costs of production, in which case adjustment will come through a fall in the local price level, leading to an expansion of exports and to a transfer of demand from some imported goods to the now cheaper local producers ; or, if factor or other prices are monopolistically or compulsorily maintained, production will decrease and the demand for raw materials will fall off, while the intensified fall in incomes due to unemployment will decrease the demand for imported foodstuffs and for even the cheapest types of consumers' goods.

Between the two extreme types described above there are, of course, numerous countries in intermediate positions ; in fact, it is unlikely that any country stands exactly at either extreme. Nevertheless it seems probable that the countries of the world can mostly be assigned to one or other of two rough groups—those in which the proportion of expenditure at the margin devoted to imports is large and those in which it is small. To adapt a phrase of Mr. Keynes, we may describe the former group of countries as having a high Marginal Propensity to Import and the latter a low one (To save space, these will in future be referred to as countries having respectively a high or low M.P.I).[1]

In attempting to estimate the M.P.I. of any particular country, two methods of approach suggest themselves. A detailed comparison of the goods and services produced locally with those imported might be expected to give at least some *prima facie* indication of its M.P.I. This could, in some countries at least, be confirmed by a study of the sequence of recent fluctuations in its balance of payments, banking statistics, interest rates and imports, though the results would in all cases have to be interpreted in the light of other local and foreign developments, such as changes in tariffs, etc. Further, it would have to be remembered that the M.P.I. of a country might change greatly with changes in the volume of expenditure. In most high M.P.I. countries the M.P.I. would probably alter directly with expenditure, and in low M.P.I. countries inversely, especially if changes in expenditure were accompanied by changes in the employment of factors. In addition, the whole relationship would naturally alter gradually over a long period of years with changes in the types of goods and services produced and imported. In spite, however, of the obvious difficulties in the application of the conception of the Marginal Propensity to Import to actual conditions, it is believed that the differences between the extreme representatives of each type of country are so great that distinctions could be drawn which would hold good in almost all conditions and over periods of many years. In existing circumstances, it seems probable that advanced "industrial" countries, such as Great Britain, would be found to have a relatively low M.P.I., and the "raw material" countries, such as South Africa or New Zealand, a relatively high one.

VI

Before proceeding to draw further conclusions from the arguments already advanced, it will be necessary to introduce two further considerations. The first of these is the form in which an adverse balance of international payments is reflected in the banking figures. Hitherto it has been assumed that the immediate effect of an adverse balance is shown in a fall in the banks' reserves of gold and foreign exchange. While this has always been true for most countries, and is now more nearly true of all countries than formerly, it is not true of all countries at all times. Certain countries, generally of the low M.P.I. type, have been, and to some extent still are, international banking centres, where foreign banks are prepared to keep deposits which they regard as the equivalent of cash. For such countries, therefore, the immediate effect of an adverse balance may be seen, not in a depletion of the banks' reserves, but in an increase in the total of deposits held with them by foreign banks.

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[1] An alternative phrase, which would have the advantage of fitting in with similar conceptions in other fields, would be "an elastic (or inelastic) Expenditure Demand for Imports". This phrase, however, seems to imply a greater precision of definition than is warranted. It might be justifiable to speak of the Expenditure Demand for Imports of a particular individual, or even of a more or less homogeneous group under specified conditions over a specified period of time. But for a country in general over an indeterminate period of time the demand for imports might vary, not only with the total expenditure of the population, but according to the precise groups or classes whose expenditures changed, the sources of the funds expended (whether from earnings, hoards, or loans), and the period of time taken into consideration. It has therefore been thought wiser to use the vaguer phrase, which indicates a rough general tendency rather than a precise relationship.

This expansion of foreign banks' deposits may arise in one of three ways. Firstly, the banks of countries which are not financial centres and which themselves have favourable balances may be prepared to keep the additional reserves thus obtained in the form of bank deposits in the centre concerned. Secondly, quite a small rise in interest rates may be sufficient to induce such banks to transfer their reserves from other financial centres; and thirdly, one effect of the adverse balance may be to cause interest rates in foreign financial centres to fall, thus inducing the transference of funds to the centre in question, even though interest rates are not raised there.

Where the effects on the banks' position of an adverse balance of payments takes this form, it is obvious that the pressure on the banking system to restore equilibrium by restricting credit is much less. If the foreign banks' balances are kept with commercial banks, there is no direct incentive to contract credit, except in so far as the fear that foreign balances are more likely than the balances of local residents to be withdrawn in cash may induce the banks to attempt to increase their cash ratios. Nevertheless, there will still be some tendency towards adjustment from the monetary side, apart from any tendency which may exist owing to a direct decrease in the profitability in local business. Even where the adverse balance is accompanied at first by a trade improvement, the passage of balances formerly owned by local depositors into the hands of foreign banks will first tend to offset the idle balances released by the expectations of improvement, and ultimately reduce the volume of deposits in active circulation. This reduction of effective deposits must in turn lead to reduced purchases of commodities or services, either directly or in consequence of a rise in interest rates due to a shortage of funds available for investment. The process of adjustment will then follow the lines indicated in an earlier section.[1]

It should be emphasised, however, that while the ultimate effect of an accumulation of bank deposits in the ownership of foreign banks is similar to that of the withdrawal of cash from the banks, the pressure towards adjustment will be far more gradual in the former case; for active deposits will then be reduced only by the actual amount of the adverse balance, while a depletion of the banks' cash reserves will (if existing ratios are maintained) compel a reduction in deposits by an amount equal to many times the adverse balance.

Even if the foreign balances are kept with the central bank, the effects on the commercial banks will probably be less severe than if the central bank's own cash reserves were depleted to the extent of the adverse balance. For in the former case the commercial banks' cash reserves will be depleted (even if the central bank does not offset the movement by open market operations) only by the amount of the adverse balance, while in the latter case the central bank, if it is to maintain its existing ratios, must reduce its deposits, including bankers' deposits, by a multiple of its loss of cash.

The deflationary effects of an accumulation of foreign banks' assets in any centre will be mitigated, but not entirely removed, if these assets are held, not in the form of bank deposits, but of investments; though in this case the movement should probably be regarded as an adjustment of the balance of payments by means of loans from abroad rather than as the effect of an adverse balance. If foreign banks were prepared to invest their funds in the same way as local residents, the effect of such an adjustment of an adverse balance would probably be similar to that of an ordinary increase in saving. In fact, however, foreign banks will almost certainly wish to keep these assets in a very liquid form. They will therefore part with their bank balances only if they can obtain suitable short-term investments in exchange for them. Unless the supply of short-term investments increases, or unless existing owners of short-term securities are prepared to invest the proceeds in long-dated securities or loans, the balances thus released by the foreign banks will remain idle in the hands of their new owners ; or, if it is the local banks which fail to secure their usual supply of short-term securities, the balances will simply disappear. The final effect of the whole transaction, including the original adverse balance, will be a fall in short-term interest rates, and a fall in the demand for commodities, either directly or in consequence of the rise in long-term interest rates, which will occur in consequence of the transfer of resources from long to short term investments. Since, however, some addition to the supply of short-term securities and some transfer of funds to longer-term securities may be expected, this tendency towards adjustment is likely to be less marked than that which follows the accumulation of bank balances in the ownership of foreign banks.[1]

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[1] This assumes, of course, that the banks do not allow deposits to expand so as to offset the growing amount held idle in the hands of foreign banks; since their cash reserves are assumed to be unchanged, any such expansion of deposits would presumably be strictly limited, even at higher interest rates.

An offsetting of an adverse balance by an increase in the short-term local assets owned by foreigners other than banks will probably have a very similar local effect to that of an increase of local assets in the hands of foreign banks, though its effects abroad will be very different.

There is also the possibility of a more permanent adjustment of an adverse balance of payments in a low M.P.I. country, which is also a financial centre, by means of a reduction in the volume of its new long-term loans to foreign countries, and the gradual repayment of old loans. Where there is only one centre lending abroad on a large scale, or, where there are several lending centres, if each supplies capital mainly to its own particular areas, it would probably take a substantial rise in interest rates to check foreign borrowing. Further, the curtailment of foreign loans by any one country, whether by high interest rates or other means, would reduce the total amount of international lending, cause difficulties in borrowing countries, and probably have the effect of reducing the volume of international trade, including the exports of the country which had curtailed its loans. In a world, however, in which there were a number of financial centres of comparable importance, competing with each other for the supply of capital to all parts of the world, it would take only a small rise in interest rates in any one centre to divert borrowers, both of new funds and for conversion purposes, to other centres. If the same causes which had induced a rise in interest rates in one centre brought about a fall in others, there would need to be no net reduction in the total of new long-term international lending and no adverse repercussions in borrowing countries or on international trade. Such a system would be very different from any which the world has yet seen; but it is at least possible that developments in this direction may ultimately help to solve the difficulties of the adjustment of the balance of payments in low M.P.I. countries.

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[1] If the whole of the increase in foreign-owned funds were invested in additional government short-term loans, which in turn were expended, e.g., on unemployment relief or government works, there would be no tendency at all towards adjustment so long as the process could be maintained.

VII

The other important factor, which needs to be taken into consideration in determining the effect on a particular country of its development of an adverse balance of payments, is the effect of its repercussions on other countries. By definition, if one country develops an adverse balance of payments, some other country or countries must simultaneously develop a favourable balance (This does not, of course, imply anything whatever concerning the balance of direct payments between the countries concerned). The reactions of a country developing a favourable balance of payments are, in general, the obverse of the reactions to an unfavourable balance, described above. They will be determined partly by the direct effects on the profitability of business, and partly by the indirect effects *via* a fall in the local rate of interest. It should be noted, however, that while a favourable balance resulting from local developments may well be accompanied by a fall in local incomes, a favourable balance resulting from developments abroad will usually be accompanied by a rise.

This direct effect on incomes will be reinforced by the effect on interest rates. The normal effect of a favourable balance is to increase the banks' reserves of gold and foreign exchange, and at the same time to increase the ratio of their local deposits to local advances. If the country concerned is a financial centre, the effect may take the alternative form of transferring to local residents local balances and short-term assets hitherto held by foreign banks. In either case there is a tendency for money available for investment to become more plentiful and for interest rates to fall, though the effect will be more marked in the former case than in the latter.[1] After a longer or shorter delay, depending partly upon the direct effects of the favourable balance, and partly upon the pre-existing state of business psychology, the fall in interest rates will tend to be followed by increased business activity and rising expenditures. The connection is, however, much less positive than between rising interest rates and falling expenditures; for interest rates can, if necessary, be raised to whatever level is necessary to restore the position, if necessary to infinity by a complete refusal to grant or renew loans. But they cannot be lowered beyond zero, if as far.

The development of an adverse balance of payments by one country will usually be followed, especially in times of fairly active trade, by a rise, after a longer or shorter time, of expenditures in one or more other countries which at the same time develop favourable balances. Whether this rise in expenditures elsewhere will help quickly to restore the balance of payments of the country with the adverse balance will depend on two further considerations: firstly, upon the extent to which an increase in expenditures in the countries with favourable balances is reflected in their imports (i.e., upon their M.P.I.), and secondly upon the time lag, if any, before these increased imports are fully reflected in increased exports from the country with the adverse balance.

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[1] There is one apparent exception to this which it is worth pausing to examine. If a flight from a foreign currency results in an increase in local deposits held by foreigners other than banks, and a simultaneous decrease in local deposits held by foreign banks, the movement will appear to the foreign banks as an adverse balance of payments. To the local banks, however, the position will not have altered; the total of foreign-held deposits has not changed, nor has their ability to make loans been increased. There will therefore be no tendency for the local rate of interest to fall. It is doubtful, however, whether such a movement can be rightly described as entering into the balance of international payments. The transaction is not one which directly concerns the local banks at all, and may be regarded as a private arrangement between the foreign banks and their customers. It is exactly analogous to the withdrawal of gold by foreign depositors from their own banks for purposes of hoarding, and will have the same effect of causing a rise in interest rates in their own countries without producing a fall elsewhere. It will in due course bring about a rise in interest rates in other countries also, as the banks draw gold from abroad or obtain new foreign balances from their former owners.

VIII

In the light of the foregoing discussion, it seems clear that it is only in high M.P.I. countries that the consequences of an attempt to adjust an adverse balance of payments by means of a restriction of bank credit and a rise in interest rates can be predicted with any confidence. In high M.P.I. countries, unless local business prospects are so favourable that expenditures are maintained in the face of a rate of interest high enough to draw sufficient long-term investments from abroad, the balance of payments will be adjusted mainly by a reduction in imports. There need be no fall in local prices or wages, no expansion in exports, and comparatively little increase in unemployment. The whole process of adjustment can be carried through rapidly, at the cost, indeed, of inconvenience to those who have to reduce their expenditures, but without any serious check to local business activity. The time taken to complete the adjustment and the severity of the credit restriction required will depend upon the size of the adverse balance, upon whether expenditures are spontaneously tending to fall or to rise, and upon the adequacy of the banks' reserves of gold or foreign exchange.

For low M.P.I. countries, on the other hand, confident forecasts can be made only in cases where developments are merely the obverse of developments in high M.P.I. countries. To take an extreme hypothetical example, if every low M.P.I. country had an adverse balance of payments, and every high M.P.I. country a favourable one, it would be fairly safe to prophesy that, in the absence of government intervention, adjustment would take place by means of an expansion of exports from low to high M.P.I. countries, even without any restriction of credit in low M.P.I. countries (This is not to say, of course, that such restriction of credit would be unwise from the long run point of view; for in its absence there might well occur an excessive expansion of credit in the world as a whole, leading ultimately to a serious reaction). The time-lag in the adjustment would depend partly on whether the banks in the high M.P.I. countries wished to replenish their reserves of gold or foreign exchange before relaxing credit conditions, and partly upon whether incomes and expenditures in high M.P.I. countries were already expanding. If the adverse balance of the low M.P.I. countries had been due to an increase in their imports or in their loans to foreign countries, the adjustment would be likely to be rapid.

So extreme a case as this is hardly likely to occur in fact; but it is possible that an approximation to it exists at the present moment, when in at least three important countries —Great Britain, the United States and France—all of which have probably a fairly low M.P.I., imports have recently been rising fairly sharply, while exports have been rising more slowly in Great Britain and U.S.A., and falling in France. There is some probability that in this case the adjustment will take the form of an expansion of exports from low M.P.I. countries (though not necessarily from all of them). This probability seems to be increased by the fact that in certain other countries whose M.P.I. is probably in normal conditions also fairly low, quotas and exchange restrictions have made the value of imports more or less directly dependent upon the value of exports, so that the foreign trade of these countries reacts in some respects as if their M.P.I. was high.

Where the probable repercussions of developments abroad are so small or delayed as to be negligible, no definite forecast can be made of the results of an attempt to restore equilibrium in the balance of payments of a low M.P.I. country by means of credit restriction. If the country concerned is an international financial centre, adjustment may be brought about by a diversion of long-term borrowing, or more temporarily by an inflow of foreign short-term funds, which, however, may merely mitigate, but not entirely remove, the effects of a rise in interest rates upon internal business activity. In the absence of adjustments through the capital markets, equilibrium can be restored only by a fall in local incomes, either as a direct result of the causes producing the adverse balance of payments or in consequence of a restriction of bank credit, leading in turn either to a fall in internal prices and costs, and to an expansion of exports, probably accompanied by some contraction of imports, or, if the internal cost structure is rigid, to a contraction of imports due to unemployment.

The Breakdown of the Boom: a Possible Mechanism

By G. L. S. Shackle

It is generally admitted by writers on the business cycle that the hardest thing to explain is the actual breakdown of the boom, the sudden unwillingness or inability of a large section of entrepreneurs to continue operations. The purpose of this note is to show that such a breakdown would be the natural consequence of some fairly simple assumed conditions. The suggestion is not put forward as a rival to existing theories, but merely as an additional possibility which might perhaps usefully be borne in mind in studying actual cycles. Its tendency would be to shift emphasis from economic to certain technical aspects of investment. Only the briefest reference will be made here to monetary aspects of the mechanism of the crisis.

Chief among the assumed conditions is, of course, the ignorance among entrepreneurs of each other's beliefs, resources, and intentions, which apart from anything else would make correct foresight impossible.

Let us first consider the problem of economic strategy confronting an entrepreneur who is planning, say, a hydro-electric power enterprise. He has to ensure that the total of instalments of direct-outlay construction-cost, when each is accumulated at expected rates of interest up to the moment when the construction will be completed, is no greater than the total of expected instalments of return (sale-proceeds of the plant's services minus running-costs), when these are discounted over the appropriate periods back to the moment of completion.[1]

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[1] If the instalments in each case are thought of as referring to short intervals $\triangle t \rightarrow 0$, this can be conveniently expressed in symbols. It will help subsequent discussion if, instead of supposing the entrepreneur to put himself mentally at a future completion-date and accumulate his costs up to it, he discounts costs as well as returns back to a date $t = 0$ when construction is about to begin.

Let : $c(t)$ describe the time-shape of direct money outlay on construction of the plant, to be completed at a variable date T_x, to be decided on economic grounds.

$I(t)$ be the expected rate of interest for continuous compounding or discounting, connecting any date t with $t = 0$. This expected rate will vary according to the particular t considered.

$g(t)$ be the time-rate of returns (sale-proceeds of electrical energy, minus running costs) expected at each future moment t in the life of the plant, that is, the interval $T_x \leqq t \leqq T_\omega$.

Then the entrepreneur's problem is to ensure that :

$$\int_0^{T_x} c(t)e^{-I(t)t}\,dt \leqq \int_{T_x}^{T_\omega} g(t)e^{-I(t)t}\,dt\,.$$

The elements in this problem are as follows:

(1) a variable completion date. According to the location of this, the useful life of the plant will be located in an earlier or later segment of future time, wherein conditions of demand for the services of the plant will probably be different. But also, a different choice of completion-date will imply some change in the time-shape of direct-outlay on construction. That is, advantage can probably be taken of a more remote completion-date to alter the time-shape of direct money outlay (the form of $c(t)$), so as to reduce the total of the direct-outlay instalments[1] at the cost of lengthening the periods over which some direct-outlay instalments must be accumulated.

(2) the time-shape of direct money outlay (the form of $c(t)$). The argument which will be developed below assumes a fairly small number of very large-scale projected enterprises in a region isolated as to the supply of resources for their construction. Each of these projects is assumed to be large enough to influence the price of resources during its construction, and therefore probably the price of its own services, according to its scale, during operation. If the time T_x from beginning to end of construction is short and $c(t)$ the time-rate of direct outlay consequently large over some part of this time, then during the time of intense application of resources the prices of these will probably rise. This is a reason for not speeding-up construction beyond a certain intensity. There is a further possible reason. By thorough survey, research, and the making of equipment special to this unique enterprise, construction may be made more efficient in the quantities of materials, man-hours and horse-power hours required. But such special preparations and the beginnings of the work itself may have to be done in succession. Against these two reasons is the lengthening of the periods over which some part of direct-outlay cost will be compound-increased.

(3) the scale of the project. This will influence both the pressure put upon available flows of resources during construction, and hence their prices, and also the prices of the services of the plant when complete.

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[1] The reader's indulgence is asked for the use of the word "instalments" with its implication of discontinuity. In order to justify the use of the integral sign, we must consider rates at moments of time, obtained by letting the intervals $t\triangle$, to which the instalments refer, tend to zero.

(4) the technical design of the plant, which can vary between the extremes of using highly-mechanised self-operating equipment of high initial and low operating-cost, or simple plant of low initial cost requiring much labour.

It will be clear that in the case of every one of these elements the decision will depend largely on the rates of interest over various time-segments. Especially important will be rates of interest connecting future dates during the useful life of the plant, with a still more remote future; for these will powerfully influence the intensity (number and scale) of construction of durable projects during the period when the plant now projected hopes to sell its services; and an important part of the demand for these services may come from further construction. It can hardly be needful to say explicitly that all these decisions are not independent but mutually inter-dependent.

However, it will not be possible for the entrepreneur to give his construction-function any form he pleases. The time-rate of direct outlay will be largely governed by technical considerations. Thus in building a new underground railway, for instance, large sums may be spent on survey, designing, acquisition of land and preliminary clearance and excavation, before large orders can be placed for steel, cement, etc., and construction begun. There must almost necessarily occur some peak of employment of skilled labour, another of the expenditure on steel, and so on. These may overlap, and reinforce each other.

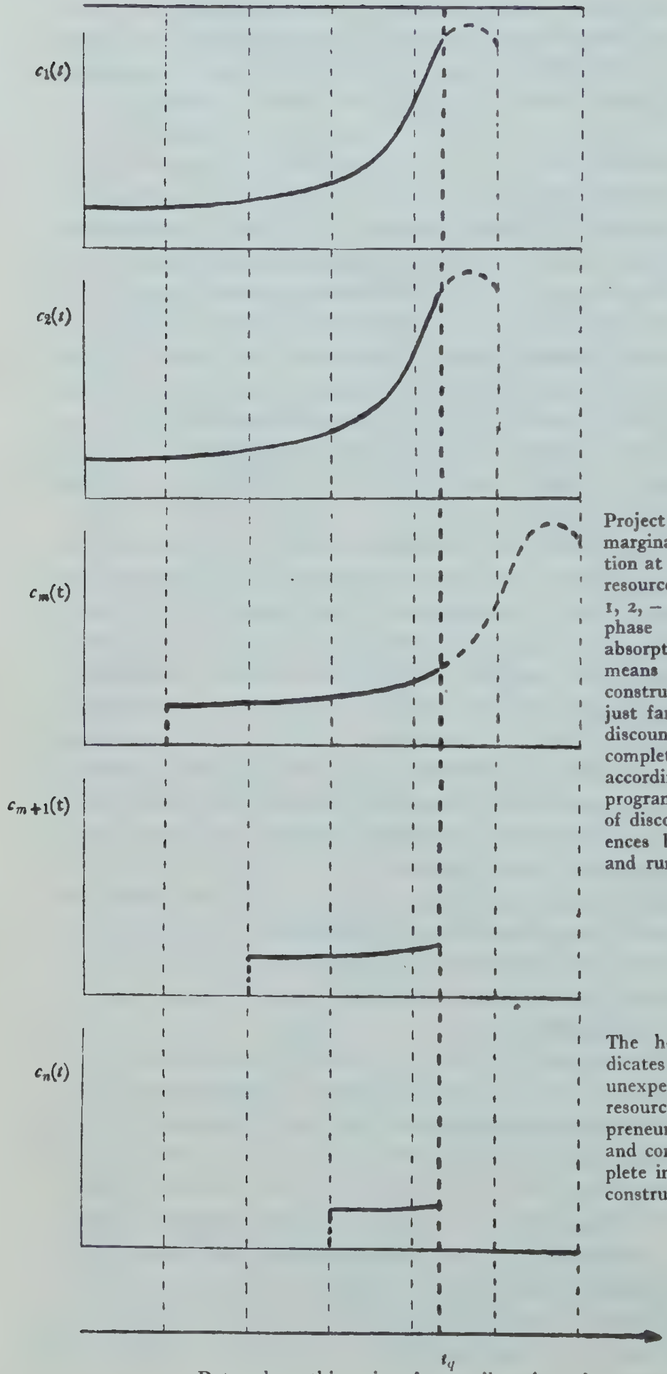
The suggestion I wish to make rests on five assumptions:

(1) that entrepreneurs are imperfectly informed of each other's beliefs, resources, and intentions.

(2) that many equipment projects, *e.g.*, a canal, are indivisible in a double sense:

- (*a*) their nature requires a very large scale;
- (*b*) they are technical organisms which can only operate when complete, so that the partly-built project, if it has no prospect of being completed, is valueless.

(3) that the programme of construction in such a case is largely determined by technical facts, and the entrepreneur has therefore a limited choice of ways in which he can modify the time-shape of direct money outlay on such resources as steel, cement, and certain kinds of



Dates along this axis refer to all projects in common

Project *m*, which has reached marginal phase of construction at date t_q, when prices of resources rise because projects 1, 2, – – – have reached the phase of high time-rate of absorption of resources. This means that at this date its construction has advanced just far enough to make the discounted expected cost of completion from this phase according to the original programme less than the total of discounted expected differences between sale proceeds and running costs.

The heavy dotted line indicates the date t_q when an unexpected rise of prices of resources makes the entrepreneurs revise their beliefs and consider whether to complete immediately or suspend construction of their projects.

skilled labour, which are required in common by many such projects ; and

(4) further, that this time-shape will often bear some resemblance to an exponential curve, because the project as it grows will offer scope for the simultaneous application of more and more resources, and these will be applied at each moment at as great a rate as is technically convenient in order to economise the mounting loss of interest as the sum invested increases. In these cases this time-shape or construction-function will include a segment of gradual increase followed by a segment where it rises steeply to a much greater height.

(5) that entrepreneurs do not co-ordinate the dates of initiation of such projects amongst themselves.

The possibility of breakdown is latent in these features in two ways :

(A) If in an economy at any one time large proportions of the demands for construction-resources come from a small number of very large-scale projects of this type, the laws of chance will ensure at intervals a conjuncture of high outlay-rate phases of several projects together.

(B) If in the same conditions, some special stimulus causes a number of projects having similar intended construction-functions, to be initiated simultaneously, their high outlay-rate phases, whose existence we have postulated, will automatically coincide. Such a stimulus would occur if, for instance, the building of an electric power grid suddenly made it worth while to move industries away from coalfields to the proximity of their markets, ports, or labour-supply.

The consequences, which will be similar in either case, may be worked out by considering case (B).

We consider a number of projects which, according to the expectations of the several entrepreneurs concerned, at the respective dates of initiation, will have approximately identical construction-functions. This time-shape of direct money outlay on construction is of the type shown completely for Project 1 in the diagram, and is of the general type mentioned in assumption (4) above. Its peculiarity is a relatively long period of low time-rate of expenditure, followed by a sudden large increase of this rate. On the sudden emergence of a profit-prospect for the construction of projects of this sort (they may have in common, high durability or some other characteristics bound up with their profitability under the newly-perceived conditions, *e.g.*, a fall in the rate of interest), a number of them will be started more or less simultaneously, and as the knowledge of the new situation spreads, and the increased demand for construction-equipment for these first projects is felt, other projects (not necessarily with the same intended construction-function) will be started at intervals, until a number of them are in progress in a time-echelon, and industries producing construction-materials are working at their highest efficient output. Now it is the time-rate at which productive services (human and natural, as well as those of materials and instruments) are demanded which, in face of given rates of flow available in the short period, determines their price. If the time-shapes of direct money outlay on all projects in course of construction at a moment are described by $c_1(t)$, $c_2(t)$, - - - $c_n(t)$, then the total direct outlay on resources at any moment t_x is the sum of these at $t = t_x$. On our diagram, this is the sum of the ordinates lying on the vertical straight line corresponding to the moment in question. Since at full employment, to which we assume the situation approximates when a certain number of projects have been started, the supplies of most real resources must be very inelastic in the short period, a rapid and large increase of the sum of the simultaneous time-rates of direct outlay on all projects $c_1(t) + c_2(t) + - - - + c_n(t)$ will cause a rapid rise of prices of most construction resources. When the earliest group of projects reaches the phase at which their time-rate of expenditure on resources suddenly rises, the prices of these resources, which are required by all the projects in common at every phase of their construction, will rise also. This has not been foreseen by the entrepreneurs who have initiated later projects. Some of these later projects have only just been started when prices of labour, materials, etc., begin to rise, and only small proportions of the quantities of these resources, measured in natural units, which will have been absorbed by the whole project when completed, have yet been applied. If these projects are to be completed, large physical quantities of the various resources will have to be bought at the unexpected higher prices. But others have already at the date t_q when the error of foresight is perceived reached a fairly advanced phase.

The question for each entrepreneur at such a moment is whether the cost which would have to be incurred *from this moment onwards* in order to complete the project from its existing stage, according to the original or a changed construction-programme, can be kept less than total discounted returns according to the new expectations of this moment : (costs and returns being accumulated and discounted respectively to the new completion-date). According to the answer he will decide to proceed with or abandon the project. What has been already spent counts only in this way : that it has reduced the quantities of resources, in terms of man-hours, horse-power hours, tons of cement, etc., which are needed to carry the project from the already-attained stage to the point where it can begin to earn. The entrepreneur must consider his problem entirely afresh, and make new forecasts of all the elements under the newly-perceived conditions : cost of remainder of construction at a range of different possible completion-dates, undiscounted returns[1] during a working life beginning at each of these possible completion-dates, the rates of interest probably appropriate for discounting these ; a different complete set of these estimates for each of a reasonable number of different scales of the plant ; and, at each scale, a different set for various more or less mechanised and initially-expensive technical designs.

The important fact is this : postponement of completion, or drastic reduction of the rate of direct outlay on resources, will have virtually the same effect as abandonment in causing unemployment among those engaged on the project or in making materials for it.

Is such a rise of prices of resources from this cause likely to happen ? The conditions for its being likely seem to be as follows :

Either (1) a high proportion of all investment is constituted by a few very large-scale construction projects. In this case quite arbitrary changes of great amplitude could take place in the aggregate time-rate of direct-outlay on all projects at a moment, namely $c_1(t) + c_2(t) + - - - + c_n(t)$.

(2) If (i) a high proportion of all investment were constituted by projects of a very similar time-shape

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[1] *i.e.* sale-proceeds of the plant's output minus running costs.

and (ii) if this time-shape had a moderately high initial segment of some length, followed by a steep and large rise,
and (iii) if the construction of a high proportion of these projects were begun simultaneously because of some change affecting the prospects of them all.

We have insisted above on the importance of the system of interest-rates, including those covering periods located wholly in the future, for the durable goods constructor. A sudden switch-over of beliefs about these, on the part of many durable-goods makers at the same moment, might arise from the same cause and lead many of them to start large-scale projects simultaneously. There are also many ways in which expectations of absolute money returns from given technically-defined projects might suddenly improve, or such projects, already profitable in theory, become technically feasible, through scientific advance or the completion of another scheme which opens up new investment opportunities (*e.g.* the canal or transmission grid already mentioned). It also seems probable that in such a project a period of preparation, during which a considerable proportion of the originally-estimated total cost may be sunk in surveying, clearing the ground, and preliminary excavation, is often followed by a rise in the rate of absorption of some resources, *e.g.* steelwork and cement, from zero to near its maximum in a very short space of time. The point to be emphasised is this: as construction proceeds, the money destined by the entrepreneur for buying resources for the project, but not yet invested in it, grows steadily less. Whatever the quantity of this diminishing fund on any date, this sum can earn interest for the entrepreneur. But as instalments of it are used to buy resources for the project, these instalments surrender their current fruitfulness in exchange for the prospective returns from the project when completed. If at any date during construction, the entrepreneur considers postponing completion, he will have to balance a loss and an offsetting gain. The loss will consist in the difference between the present value of expected returns from the project if this is completed at an earlier date, and their present value if completion is postponed to a more remote date. Against this will be offset the difference between the present value of whatever series of future direct outlays will be required to complete the project by the earlier date, and the corresponding present value for completion at the more remote date. Evidently the further construction has proceeded, the nearer will be the originally intended completion-date, and the larger will be the *absolute* reduction of the value, discounted back to t_q, of returns of a given time-shape, when the completion-date at which they will start is postponed by any given interval. But the absolute difference between the present values of the respective series of future direct outlays, which could be used to complete the project at an earlier or later date, is smaller, assuming resource-prices unchanged, the further construction has proceeded. For these reasons it will be worth while for the entrepreneur to bid higher and higher prices for the resources needed for earlier completion, the further construction has already proceeded when the error of foresight is perceived.[1] The demand for resources, which in face of an inelastic short-period supply determines price, is, we must remember, a demand for a *time-rate of flow* of resources.

Thus if the expected total value of sale-proceeds minus running-costs (the differences which we have called undiscounted returns) discounted back to a future completion-date T_x, were $G=$ £1,000,000, then if the rate of interest is 5 per cent. per annum, postponement of completion from 2 years hence to 4 years hence will reduce the *present* value of G from £907,030 to £822,700, that is, by over £84,000, while postponement from one year hence to three years hence will reduce the present value of G from £952,380 to £863,840, that is by over £88,000. Suppose that the originally-intended completion-date is still two

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[1] If $G(T_x) =$ expected total of differences between sale-proceeds and running-costs, each discounted to a variable completion-date T_x,
T_a is an earlier and T_b a later completion-date,
$t = o$ is the present moment, when an error of foresight has just been indicated to the entrepreneur by the unexpected rise of prices of resources;
$k_a(t)$ describes the newly-estimated time-shape of the remainder of direct money outlay, needed to carry the project to completion from its present stage by date T_a;
$k_b(t)$ is the corresponding time-shape for T_b at lower expected prices of resources.
$I(t)$ describes the course of the interest-rate for continuous discounting;
then completion will be postponed from T_a to T_b if

$$G(T_a)\,e^{-I(T_a)\,T_a} - G(T_b)\,e^{-I(T_b)\,T_b} < \int_0^{T_a} k_a(t)\,e^{-I(t)\,t}\,dt - \int_0^{T_b} k_b(t)\,e^{-I(t)\,t}\,dt.$$

years hence, and that by suspending construction for two years and restarting at the end of that time, it is expected that resources will be obtainable at their originally-expected prices. Suppose further that the project is at present half-constructed, if we measure in terms of the originally-estimated cost. Then by suspending work for two years the entrepreneur could discount the remaining direct-outlay costs of, say, £475,000 and offset £44,160 against his loss of £84,000. Clearly he will not be willing to pay prices higher by more than 84,000—44,160/475,000 or about 8 per cent., as compared with those originally expected, for the remaining resources he requires for completion. If prices rise higher than that, and the expected *G* remains unchanged, he will suspend construction. But if the originally-intended completion-date was one year hence, and £240,000 of resources at the old prices are still required, then suspension for two years in the hope that resource-prices will fall back to their original level will cost him £88,540, against which only about £22,300 can be offset. A price-rise of over 25 per cent. will now be required to deter him from immediate completion. Finally if the project could have been completed immediately, at the old prices, by spending £100,000, then only £9,300 can be set off against the reduction of *G* by £93,000, involved by a two years' suspension. In this case, a rise of prices of over 80 per cent. will be tolerated. If at a certain moment a conjuncture of sudden increases in time-rate of direct outlay occurs, and if at this moment there are a large number of projects at an early phase of construction, those projects which are already far advanced will bid up resources to great heights in order to complete themselves, and the embryo projects will be suspended or abandoned. But these embryo projects, taken together, may account for a very considerable volume of employment.

There is, however, another consequence, less conspicuous but probably quantitatively more important: that of *postponing renewal* of existing equipment. Equipment, which is already in operation and for whose expected renewal other entrepreneurs have made provision of certain resources highly specialised to individual industries, can be operated for some time after its normal date for replacement, especially if this date was decided on in expectation of obsolescence due to scientific advance and invention. If the prices of non-specific resources for its renewal rise unexpectedly, replacement may be postponed.

The result, just as in a case where an embryo project is suspended, will be that factors specific to this type of equipment-complex will cease to be demanded. Just so many systems will continue to be constructed or renewed as can be provided with non-specific resources, out of the quantities of these available. The rest, when they fail to secure the necessary non-specific resources to enable construction or renewal to be completed, can make no further use of their own specific resources, hitherto engaged on or intended for them. How the sudden dis-employment of any large section of resources can lead to a cumulative process of deflation is outside the scope of this article.

When entrepreneurs with uncompleted projects under construction see prices of resources suddenly and unexpectedly rising, they must revise their beliefs or assumptions about the future. If they diagnose the trouble as being caused by a conjuncture of high outlay-rate phases in a number of very large-scale construction processes, they will infer that such a conjuncture will give way sooner or later to a trough of low rate of aggregate direct outlay on resources, and their problem will then be to estimate the saving of direct-outlay costs and the loss from postponement of returns which will result from waiting until prices of resources fall, taking into account any changes in the technical basis of the construction-function (the technical combinations of transformations underlying this time-shape of direct outlay) which the delay may make advantageous. They will also probably have to reconsider their forecast of the time-shape of returns, and the rates of interest at which these should be discounted. This brings us to a suitable place for linking-up the argument with other aspects of the mechanism of the crisis by considering in relation to each other :

(1) the fact that a conjuncture of high outlay-rate phases will raise the prices of resources ;

(2) the fact that for a given scheme of liquidity-preferences at various constellations of prices, and given "bullish or bearish" conditions, such a conjuncture, implying an increase of MV, will raise the rate of interest after a certain degree of monetary expansion has taken place.

The implications of (1) depend on what view is taken of probable total discounted returns (returns=sales proceeds minus running costs). Since the rise in prices has proved the entrepreneur's forecast of construction-cost to be wrong, he will most probably revise his beliefs about future returns. However, the period during which construction proceeds is short compared with the working life. The project has been caught in the mid-career of its construction by the crest of a wave of resource-prices. But during the long working life the price of the plant's output will probably fluctuate, about an average which nothing in present events suggests will be higher than was thought at first.

Number (2) above means simply that both blades of the scissors will be moving in opposite directions, so that there will be a rise in the rate of discounting future returns back to, and accumulating costs up to, the completion-date, as well as a rise in the direct-outlay costs themselves; the present value of gross returns will thus suffer a double tendency to be depressed below the cost, from now onwards, of completing construction.

To summarise: A conceivable mechanism of the break-down of a boom is seen in certain features of large-scale complexes of equipment:

(1) They are inoperable and yield nothing until complete.

(2) Their mode of construction, and hence within certain limits the time-shape of expenditure on this construction, is determined by technical considerations.

(3) The time-shape of direct-outlay on resources for their construction may be such that a considerable part of the whole task can be performed without a high rate of expenditure being at any time involved; the concurrent construction of a number of such projects simultaneously is possible so long as there is a low rate of expenditure in all or most of them.

(4) When a certain degree of advance towards completion has been reached, delay in completion means that the beginning of a large potential flow of returns is pushed out into the future, offset by a relatively small flow of interest from sums intended for the project but not yet invested.

(5) If at such a stage in the simultaneous construction of several very large-scale projects, the time-rate of direct outlay on each suddenly rises in accordance with the

technically-imposed programme, an acute shortage of certain non-specific resources will be felt in construction-industry generally. The projects which are approaching completion at a very high total expenditure will, however, be the most tenacious in the struggle for resources, and may drive up the prices of these very greatly.

(6) A large number of existing equipment-systems may have been intended for reconstruction at this time, in order to incorporate technical improvements. Physically, however, they are still in good order, and the replacement can be postponed until prices of materials fall. (Postponement of *renewal* of equipment-systems which are already earning, need cause no serious loss.)

(7) Projects whose construction is in embryo, and replacements which would normally be due of existing systems, will therefore be temporarily or permanently abandoned. These, however, have been employing certain resources *specific to themselves*, the demand for which will disappear when the shortage of non-specific resources causes the work to be stopped. The loss of buying-power of these dis-employed resources may start a deflationary process.

In the mechanism suggested in this article, it is perhaps rather an internecine strife among equipment-constructors than a struggle for resources between these entrepreneurs, on the one hand, and consumable-goods producers, on the other, which precipitates the initial breakdown.

It may be objected that in a modern national economy, the condition that the construction of a few huge projects should constitute an important part of total investment at any moment, is seldom fulfilled. I would point out that the relevant unit in this case is not a national or world-economy, but a *region* within which resources such as skilled labour, on the one hand, and heavy materials on the other, are cheaply mobile in the short period. The removal and re-housing of large numbers of workers and their families is lengthy and expensive.

In conclusion, I would say again that this article is intended to suggest possibilities and not to assert that they are realised in practice; and to acknowledge the use made on every page of ideas originated by Professor Hayek.

A Note on "Time and Investment"

By C. A. Wright

In "Time and Investment",[1] Mr. K. E. Boulding reaches certain conclusions which he summarizes in part as follows:

> "(1) A definite, valid, and significant concept of a 'period of investment' . . . can be found in the concept of a 'time spread'.[2] (2) Where the investment is made up of a number of repetitions of an elementary investment, the time spread of the investment is equal to the time spread of the element. (3) A continuously repeated element therefore has a finite time spread, although the investment itself may proceed indefinitely into the future. (4) In a continuously repeated investment, the amount of capital invested is constant, and is directly proportional to the time spread . . . (5) In an investment which does not consist of the continuous repetition of a finite element, the capital is not constant and the capital invested bears no simple and direct relation to the time spread. (6) An investment which consists of a continuously maintained capital good has a finite time spread, however far into the future the investment proceeds."

Since Mr. Boulding's argument is partly mathematical and partly economic, an elucidation of his paper may prevent economists from surrendering before the thunder of his mathematical artillery and mathematicians from succumbing to the rattle of his economic small arms.

Conclusion (1) asserts that the concept of "time spread" is a "definite, valid, and significant concept of a 'period of investment'". What is meant by "definite, valid, and significant" is not explained, and, to avoid doing Mr. Boulding's ideas any injustice and to escape any resort to a verbal quibble, it is desirable that the meaning of these words be determined.

If time spread were ambiguously determined by Mr. Boulding's definition, then time spread would not be a useful concept since any proposition (mathematical or literary) concerning it would be ambiguous. "Definite," then, must mean that time spread is uniquely and unambiguously determined for each investment, an investment being, in Mr. Boulding's phrase, "the complete history of payments into and out of a day book account".

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[1] Economica, May, 1936, p. 196.

[2] "Time spread" is defined as follows: Let M be the sum of positive and N of negative payments in an investment account. Then if $M(1 + i)^{T_n - T_m} = N$ where i is the earned rate of interest, $T_n - T_m \left(= \frac{\log N - \log M}{\log(1 + i)} \right)$ is the "time spread".

"Valid and significant" will be taken to mean "economically valid" and "economically significant" and not "mathematically valid" or "mathematically significant", on the assumption that Mr. Boulding's conclusion is intended as a contribution to economic theory and not as a mathematical *tour de force*.

The remaining conclusions are propositions concerning time spread. Hence, if it can be shown that the first conclusion is erroneous—if time spread is indefinite, invalid, and not significant in any economic sense—then it will have been shown that the remaining five propositions are of no particular interest or importance.

There are four distinct ways in which this may be accomplished. The first consists in showing that, on Mr. Boulding's assumptions, the rate of interest is a mathematical convention without economic significance; the second, in giving a simple case in which time spread has no economic meaning; the third, in pointing out that the interest rate (and hence time spread) is not uniquely determined by Mr. Boulding's definition; and the fourth, in demonstrating that the compound interest law, which Mr. Boulding assumes throughout, is itself highly artificial and purely conventional.

The first argument follows directly from Mr. Boulding's definition[1] of the rate of interest i. This definition presupposes the complete liquidation of the particular investment under consideration, that is to say, the balancing of the investment account at zero; it is simply a statement of the fact that the sum of the positive and negative items, each accumulated over its appropriate period at the rate i, is zero. If the equation expressing this fact be used to define i, then i is nothing more nor less than a value which balances the accumulated items at zero. If the reader doubt this, let him assume an investment consisting of a number of payments into an account at different dates *and earning different interest rates*; let him accumulate each of these items at its respective rate to some single date; and let him make a single withdrawal at that date of the sum of the values so accumulated. If he then substitutes his various payments into the investment account and his single withdrawal in Mr. Boulding's equation of definition, he will find that a value for i may be obtained which is in general different from each of his original interest rates. If he likes, he may regard his result as a very complicated mean, average, or central value, but it will be impossible for him to show its economic significance, for it will have no counterpart in real life. In this sense, it is nothing but a mathematical convention.

For the second argument, assume the investment to be a bank

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[1] P. 198; equation 3:

$$\sum m_j (1+i)^{-t_j} = \sum n_k (1+i)^{-s_k}$$

where the m's are payments into the investment account, the n's are withdrawals from the investment account, the t's and s's are dates of payments and withdrawals respectively, measured from any base date, and the summations are made over all the different items designated by altering the subscripts.

deposit; assume that interest is compounded annually at some rate and that overdrafts are charged at the same rate; finally, assume that 1,000 (in terms of any unit of account) is invested initially, 2,090 is withdrawn at the end of the first year, and 1,092 is paid in at the end of the second year, at which time the account balances at zero and is closed out.[1] Mr. Boulding's equation of definition then becomes:

$$1{,}000\ (1+i)^2 - 2{,}090\ (1+i) + 1092 = 0.$$

His M equals 2092, his N equals 2090, and an i equal to .05 (5 per cent.) satisfies the equation. But what happens to Mr. Boulding's time spread? It equals approximately *minus* .01963 years, a result which can hardly be regarded as significant from the point of view of economics.

The third argument depends upon what is commonly called "the fundamental theorem of algebra"; the theorem asserts that any algebraic equation of degree n has n solutions. Applied to Mr. Boulding's definition of the interest rate, it means that several different and reasonable values may be obtained for i, to each of which will correspond a different time spread. In short, time spread is not uniquely defined.

The example used in the second argument was devised with this in mind. Two paragraphs above it was asserted that .05 (5 per cent.) satisfied a certain equation. That was true, but it was equally true that .04 (4 per cent.) satisfied the same equation. If .05 (5 per cent.) be used, time spread is minus .01963 years; but if .04 (4 per cent.) is for some reason preferred, time spread becomes minus .02442 years. Incidentally, any limitation on the number of choices available may be eliminated by the expenditure of a sufficient amount of arithmetical labour in the devising of an appropriate example.

The fourth argument is more fundamental to economic thinking. Because banks are in the habit of crediting accounts with interest and then paying interest on the interest in the next period, there has grown up a tendency to believe that there is something about the compound interest method of description which is inherently of economic significance. It is easy to show that this is not so. If it is reasonable to describe the history of a bank account in terms of compound interest, it is equally reasonable to describe it in terms of simple interest; to assume a single investment at compound interest is equivalent to assuming a single investment at simple interest and the reinvestment of the accruing interest as it accrues. The same is true in more complicated cases; for Mr. Boulding's definition of the rate of interest we may substitute:

$$\Sigma\, m_j(1 - t_j\,.i) - \Sigma\, n_k\,(1 - s_k\,.i) = 0,$$

from which we get:

$$i = \frac{\Sigma\, n_k - \Sigma\, m_j}{\Sigma\, n_k s_k - \Sigma\, m_j t_j}.$$

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[1] The reason for choosing these particular numerical values will shortly appear.

Mr. Boulding's definition determines an i at which the "present value" at compound interest of all the positive and negative payments is zero; the above equations define an interest rate in an analogous manner for simple interest. They are to the simple interest rule what Mr. Boulding's equation is to the compound interest rule.

The above definition of interest has an advantage over that given by Mr. Boulding: it gives only one value for the rate of interest i. Nevertheless, it has a serious disadvantage: in many applications the simple interest rule is extremely laborious to apply. It is this fact which leads the applied mathematician to prefer the compound interest rule, but such a preference implies nothing concerning the superior economic significance of compound interest.

It is perfectly easy to find simple interest analogues of Mr. Boulding's time centre and time spread. Or, if one prefers, the simple interest definition could be used to determine i and Mr. Boulding's own definition of time spread could be adopted. In some theoretical cases Mr. Boulding's formulæ, in others the simple interest formulæ, will be the most convenient from the point of view of mathematical manipulation. In certain practical applications, a savings deposit at compound interest for example, the compound interest rule is a more convenient description; in others, a single loan and a single repayment with interest for example, either rule can be assumed—giving different values for i—and one's choice is arbitrary. In general, it seems safe to say that the compound interest rule is a preferable description of economic phenomena when and only when we can assume that an investment earns an always positive rate of return payable at regular periods and when we can assume in addition that the periodical income so earned can be and is invested at exactly the same rate payable at the same periods. That there exist such investments is not to be denied, though they are probably the exception rather than the rule, but the existence of other sorts of investment, investments which can as well be described in terms of simple interest as in terms of compound interest, indicates that there is nothing particularly significant or important for theoretical purposes in a concept based on compound interest.

This completes the discussion. It has been argued that time spread is of purely conventional significance; it has been pointed out that it has no economic meaning in a simple case; it has been indicated that time spread as defined can have more than one value; and it has been urged that there is no *a priori* reason for preferring the compound interest law, on which time spread depends, to the simple interest law. If not all but only one of these arguments be true, then time spread cannot be said to be "definite, valid, and significant" as far as economic theory goes; and it therefore follows that Mr. Boulding's other conclusions are trivial.

One is forced to prefer Mr. Boulding's bucolic example to his mathematical ones, for his conclusion that the composition of a continuously maintained apple orchard is unchanging from year to year is sound and, no doubt, of some importance in an agricultural community. One wonders whether or not this be of methodological significance. Is it not perhaps safer for all but the mathematical expert to eschew the mathematical method ? Is not the mathematical method itself useful only in the examination of complicated relations between concepts already clearly defined in economic terms ? Is it not likely that the demands of a lucid literary style can be satisfied only by clear preliminary thinking and that an obscure manner of writing is indicative of incomplete thought ? If the answer to these questions be " Yes ", then the literary economist can abandon his " hang dog " air and once again look the mathematician in the face.

"Time and Investment." A Reply

By K. E. Boulding

I MAY perhaps be allowed to group Mr. Wright's second and third objections together and take them first.

It is not altogether surprising, even to a relatively ignorant mathematician like myself, to find that it is possible to construct a quadratic equation with two positive real roots. Indeed, I admire Mr. Wright's self restraint, for it would have been just as easy to construct a much more shocking example. Thus an investment which consists of the payments 1000, -3010, and 2020 at dates 0, 1, 2, has the astonishing property that it serves equally well to define an interest rate of either 1% or 100% ! Nevertheless I am not unduly perturbed. The fact that a given set of equations may have more than one solution does not mean that the solution is indeterminate, or that it is meaningless. Thus the fact that a given set of Walrasian equations may have an enormous number of solutions does not greatly detract from their significance, and even Marshall allowed that a supply and demand curve may intersect in more than one point. What is important is whether the system is likely to have more than one *significant* solution. Now it is true that an equation of the nth degree has n roots of one sort or another, and that therefore the general equation for the definition of a rate of interest can also have n solutions, where n is the number of " years " concerned. Indeed, if we adopt continuous compounding, as in strict theory we should, the theoretical number of solutions is infinite ! Nevertheless, in the type of payments series with which we are most likely to be concerned, it is extremely probable that all but one of these roots will be either negative or imaginary, in which case they will have no economic significance. This will in fact be the case wherever our positive payments are *smaller* than, and on the whole, *previous* to the negative payments. This is the general case in " basic " investments, for in a given process, costs are likely to precede revenues on the whole, and also the sum of the costs is likely to be smaller than the sum of the revenues.

Thus the rather tortured example which Mr. Wright has so triumphantly adduced is most unlikely to be representative of any *basic* payments series. Hence multiple solutions are on the whole unlikely to occur, while even if they do occur they do not invalidate the concepts employed.

With regard to the negative time spread, Mr. Wright was perhaps too hasty in assuming that it had no economic significance. If he will examine his example again he will observe that the sum of the positive payments is greater than the negative payment. As the rate of return is positive it follows that the time centre of the positive payments must be *later* in this case than the time centre of the negative payments. And as the Time Spread is *defined* not in the way that Mr. Wright suggests but as the interval between the positive and negative time centres, when the positive centre is later than the negative centre the time spread, being measured backwards, is clearly negative. A negative time spread therefore has a perfectly clear economic significance, and is merely a special case.

Mr. Wright's first and fourth points are of more importance. I do claim for my formula for the definition of a rate of interest (Equation (3), p. 198 of "Time and Investment") that it is the general formula of which all special definitions of the rate of interest are special cases. The most important special definitions are (1) the case of a payments series consisting of a positive payment M at date zero, and a negative payment N a year after: in this case the general formula reduces to:

$$M\ (1 + i) = N, \text{ or } i = \frac{N-M}{M}; \qquad (1)$$

(2) the case of a constant income, n per annum, bought with a capital sum M, and proceeding to infinity or sold for a further sum M after a period of years. The general formula in this case reduces to:

$$i = \frac{n}{M}. \qquad (2)$$

Now, when Mr. Wright says that an investment earns different rates at different dates he is presumably thinking of the rate of interest in terms of equation (1). The rate of return in a given year must be defined as the capital value at the end of the year, plus any "negative" (i.e. dividend) payments, less the capital value at the beginning of the year, the result being divided by the capital at the beginning of the year. The capital value at the beginning of the year is a virtual positive payment; the capital value at the end of the year is a virtual negative payment. Hence what we mean when we say that the rate of return in a given year is 5% is that *if* we had bought the investment for its capital value at the beginning, and sold it for its capital value at the end, the rate of return in that payments series would be 5%. Even in this case therefore we are still using the general formula in a simplified form. The question still arises, however, is not the rate of return, as calculated by the general formula for a complex payments series running over a number of years, merely a kind of average of all the annual rates of return—the annual rates being calculated from the actual market values of the investment at the various dates. In a sense of course this will be the case, but the rate of return as calculated by the general formula is of much more significance than a mere "average": it is the rate of return which represents the yield of the investment *as a whole*—and is in consequence,—for any "market" capital values are only estimates—the only *certain* rate of return to be associated with the investment. All "values" are estimates which involve anticipations of future payments—which will almost certainly be wrong: only payments themselves are "facts". Hence only a rate of interest which is derived from an *actual*—not merely a virtual—payments series is a "fact"—all rates of interest derived from capital values are "guesses".

On the question of simple versus compound interest I cannot help believing Mr. Wright to be entirely wrong. It is much more than a mere question of banking custom or mathematical convenience: it involves the very nature and concept of a rate of interest itself. The rate of interest, in its dimensions and in its nature, is a *rate of growth*. As such it must be reckoned as a percentage of the thing that grows (value). Hence by its very nature it must be compounded: for a thing that is growing at a *constant rate* follows a compound interest (exponential) law. Hence "Simple interest" as defined by Mr. Wright is a mere mathematical expression of very little economic significance. We may perhaps clinch the point by applying Mr. Wright's formula to a very important special case. Suppose we have a payments series as in the following table:

Date	0	1	2	3	–	–	–	t
Payment	M	$-n$	$-n$	$-n$	–	–	–	$-n-M$

The rate of compound interest in this series, as calculated by the general formula, is $\frac{n}{M}$. The rate of "simple interest" as calculated by Mr. Wright's formula, is $\frac{n}{\frac{1}{2}(t+1)+M}$. Now it seems to me to transgress all our ideas of what constitutes a rate of interest to suppose that in the above example the rate of interest is not equal to the constant annual income divided by its capital value, however far off the date of liquidation may be. Indeed, if we suppose that the date of liquidation is infinitely remote—i.e. that we have an annual income in perpetuity, n, bought for a capital sum M: by the compound interest law the rate of interest on such an investment is still $\frac{n}{M}$—£5 a year bought for £100 means 5% p.a. According to Mr. Wright's law the rate of interest on such an investment is zero!

What has Philosophy to Contribute to the Social Sciences, and to Economics in Particular?

I

For a reader who is only superficially acquainted with philosophic writing on the methods and the character of the social sciences it might appear nearly impossible to give in a few words a straightforward account of the help these sciences reasonably could expect from philosophy; and it is to be feared that the publication of the two latest works on the subject, Dr. Kaufmann's *Methodenlehre der Sozialwissenschaften*[1] and Dr. Stonier's *Der logische Charakter der Wirtschaftswissenschaft*,[2] sincere and erudite though they be, will not entirely remove this impression. But the task should not be insurmountable and it is hoped that the following critical commentary on these important works may do something to clarify the position. It is hoped that any strictures which may be passed in the course of this commentary will not be thought to detract in any way from the high regard in which the authors in question are held by all who are interested in the austere matters to which they have given their attention. I criticise only in order to bring out more strongly what seemed to me to be important aspects of the truth we are all seeking. For it does seem possible to describe the contribution which philosophy could and should make to social sciences with fair precision. It is only necessary to observe a few distinctions and to force oneself to follow throughout some definitions which will be given in what follows.

According to the rules of logic the propositions which compose the body of doctrines of any science can be divided into two classes: those which figure in the system of a science as *basic premises* and which are generally called its principles or axioms, and those propositions which by means of logical operations, conclusions, are *derived* from the former. Derived propositions do not contain anything that is not to be found in their premises; the mere logical operation of derivation does not create any additional truth. Were it not for the weakness of human reason we could limit our efforts to obtaining only the basic propositions of a science, but things being as they are, the logical processes of analysis and synthesis are needed in order to clear up for our understanding the hidden implications of a system of premises which otherwise would not be recognisable.[1]

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[1] Felix Kaufmann: *Methodenlehre der Sozialwissenschaften.* Verlag Julius Springer, Vienna, 1936.

[2] Alfred W. Stonier: *Der logische Charakter der Wirtschaftswissenschaft. Beitraege zur Philosophie, No. 29.* Carl Winters Universitaetsbuchhandlung, Heidelberg, 1935.

Now philosophy deals with certain premises which form the very basis of the various sciences, principles which require a more detailed characterisation. Any proposition is either such that its logical opposite contradicts the rules of logic, or such that its logical contrary is *logically* admissible, though, of course, it might not agree with *other* perceptions. An example will help to elucidate this distinction. " A quadrangle has four corners " is a proposition of the first type because its logical contrary " a quadrangle has not four corners " (i.e. either more or less than four) contradicts the logical *principium identitatis* according to which we can attribute to each thing the properties which it has. If I say, however, of the cloudless sky that vaults over that part of the earth where I am writing, " the sky is blue," this proposition would be an example of the second kind, because the logical contrary of this assertion, i.e. " the sky is not blue," though it does not agree with the *sense data* which I have got in this moment is in no way *logically impossible.* Propositions of the first kind we call *analytical*, of the second kind *synthetical* propositions. In doing so we follow only the terminology introduced by Kant, though Kant as it is known gave his definition in a slightly different wording.[2] It is desirable, however, to impress upon the reader's mind that, for reasons which will be clearer in a moment, the usage of these terms in contemporary philosophic writing is not restricted to the definition given above or to the Kantian one but is sometimes rather ambiguous and cryptic. Whenever these terms occur one cannot be too careful in ascertaining what the author really means in using them—if he means anything at all—and it is this uncertainty in the use of terms which among similar uncertainties makes the study of philosophic literature sometimes such an extremely unpleasant task.

The relevance of this remark will be illustrated by the following example : Dr. Kaufmann attacks Kant's assertion that the geometrical propositions are of the synthetical kind (p. 311) and he assures his readers that this Kantian doctrine received a death-blow through the discovery of non-euclidean geometries (p. 54). This story, which is rarely missing in any modern tract on natural philosophy and which is thus backed by many a good authority is, however, a fairy tale and not even a plausible one. The possibility of non-euclidean geometries is proved by demonstrating that no *logical contradiction* will occur in building up geometries on the basis of principles (axioms) which are the logical contrary of Euclid's axioms. Thus the axiom that the angular sum in a plane triangle amounts to 180 degrees may be substituted by the proposition that it amounts to more, or to less than 180 degrees. Hence instead of being a death-blow to the Kantian doctrine the discovery of non-euclidean geometries is only explicit proof of what he said. It is of the very essence of his teaching that geometric axioms are indeed no " necessities of thought " in the sense that their negation would be contrary to logic but that they are synthetical propositions in the genuine sense of the word.[1]

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[1] This has been overlooked by Dr. Stonier in his arguments against the deductive method. Cf., p. 54.

[2] Our reason for choosing a definition different from Kant's is set out by Leonard Nelson in his *Erkenntnisproblem*, Goettingen, 1907, Appendix I.

Propositions may be true or false and we want some guidance for deciding in a given case to which class a proposition belongs. For *derived propositions* this is done by the logical process of *proof*: the premises are named from which the proposition in question follows as a conclusion, and the question whether the conclusion is true or false is thus shifted back to the question whether its premises are true or false. *Basic propositions*, however, according to their definition are not capable of any proof. But we may make mistakes in stating such principles, just as we are liable to make mistakes in any other case. Therefore we need for basic propositions methods other than proof in order to justify them and to give us criteria so as to distinguish between a true or a false principle. If I say that in this moment the sky above is blue I cannot *prove* this in the logical sense of the word, i.e. I cannot name any premises from which this assertion follows. The only thing I can do is to refer to my sense data and to ask everybody who doubts my assertion to use his own eyes.

But not all the basic propositions which occur in a science can be justified in this simple way by a *reduction to* our *sense data.* In actual fact this is only possible with *empirical propositions or*—to use another equivalent but much misused term—with *propositions a posteriori.* Mathematical propositions e.g. contain an assertion of a *generality* which goes far beyond all possible experience we can acquire through our senses, and the same is true of the standard example of all textbooks of logic: " All men must die." This statement is meant to hold not only with regard to those whom we actually see dying, but for everyone at present, in the past and in future. It has little sense to follow empiricist philosophers and to call such an assertion a generalisation from facts, since the question immediately arises what gives us the right to generalise. Sense data do not tell us anything about *all possible* cases, and there is no logical process which enables one to derive a general proposition of the above form merely from statements such as " I see the man A dying," " I see the man B dying," etc. It would be a thorough misunderstanding to believe that induction could achieve this logical miracle. An induction, like every other logical conclusion, requires a major and a minor premise. The empirical statements in our case only furnish the minor premise, and so long as a major premise is not given which already contains the conception " all phenomena of a certain kind," we cannot possibly derive our " generalised statement " without committing a *petitio principii.*

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[1] This assertion is, of course, not affected by calling mathematical axioms " proposition functions " because of their primarily not being concerned with individual empirical objects—a mere change in the vocabulary.

Propositions which cannot obtain their final justification through a reduction to sense data will be called *propositions a priori.* The distinction between propositions *a priori* and *a posteriori* has, of course, a strict sense only if we apply it to basic propositions, since derived propositions may follow from premises which are partly of an *a priori*, partly of an *a posteriori* nature, so that the conclusion contains both elements combined. Thus our example " All men must die " is certainly not a basic proposition of biology; the generality of the assertion contained in it is an element *a priori* which characterises a law of nature, whereas the conceptions " man " and " mortal " are elements *a posteriori*, their source clearly being our sensual experience.

The question arises whether basic propositions *a priori* are of an analytical or of a synthetical nature in the defined sense. If they be analytical they do not require any justification, their logical contrary being *eo ipso* false; however, if they be synthetical a somewhat awkward situation has to be faced. In case of empirical propositions which are altogether synthetical there is no difficulty in demonstrating that sense data are the ultimate source of knowledge on which these propositions are based. But how, we must ask, are we in a position to justify synthetic propositions *a priori ?* That this question is a genuine problem is revealed by the fact already referred to, that geometric propositions are of a synthetical nature. Here we have indeed—as Kant asserted, which assertion has not been disproved to the present day—synthetic propositions *a priori*, since the generality with which these laws are asserted makes it impossible to consider sense data as their ultimate source. The proof that such general principles of natural sciences, as e.g. the law of causality, also belong to the class of synthetic propositions *a priori* is the permanent contribution Hume and Kant have made to philosophy.

The attempt has often been made, however, to weaken the rigidity of their proofs and to reduce the truth of philosophical and mathematical principles to sense data or logic, or to demonstrate mere convention as their ultimate source. Such attempts are only too understandable since it is indeed an awkward situation when we cannot easily name a source from which these propositions flow in such a simple way as can be done by reducing empirical propositions to sense data.[1] So long as their source remains undiscovered all sciences which are built on philosophical or mathematical principles—and there is none which is not—hang, so to speak, in the air. The problem thus outlined was first recognised by Kant in all its importance in his famous question: How are empirical sciences at all possible ?—and he tried to solve it by his critique of reason.

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[1] Terminological indeterminateness and the use of an artificial highly elaborate language the meaning of which is difficult to grasp greatly facilitate, of course, such self-deceptions. A typical case for this will be given later when we discuss Dr. Kaufmann's terminological method to make the economic principle, and the problems connected with it, simply disappear. Cf., Footnote 1 on page 451.

Concluding, we may say that a twofold dichotomic distinction of the basic propositions of any science yields the following cases :[1]

	Analytical	Synthetical
A posteriori	———	1. Empirical propositions which find their justification through a reduction to sense data.
A priori	2. Propositions which need no justification since their logical contrary is *eo ipso* false.	3. Philosophical and mathematical propositions the justification of which is the object of the critique of reason.

and the aid which philosophy can give to an empirical science can be determined as the task of collecting, systematising and justifying the propositions of the third class.[2]

II

It was necessary to point out these things in detail because neither Dr. Kaufmann nor Dr. Stonier explain them with sufficient clarity. There can be little doubt, however, that both of them, though using a somewhat different terminology, see the fundamental problem of the methodological investigations in a similar way as set out here.[3]

For a solution of this problem, Dr. Kaufmann fluctuates in a somewhat staggering way between the *conventionalist* thesis which sees in acts of mere arbitrariness the ultimate source of philosophical and mathematical principles, and the thesis of *rationalism* which tries to brand all such principles as analytical. In his book the assertion that a "necessary connection" between subject and predicate can be found *only* if the predicate by definition is determined as a property of the subject, "in which case the proposition in question is an analytical one" (p. 45), can be found side by side with the statement that geometrical axioms (p. 55) or laws of nature such as the principle of energy (p. 62) are only "conventions based on the test of experience," and it is left to the reader to find his way through these inconsistencies. It will, I hope, be obvious to the reader that the rationalist way of justifying principles cannot succeed because these principles are by nature synthetic, and the menace is apparent to which a science is laid open if sheer arbitrariness of conventions is declared its supreme authority. This menace will hardly be diminished by speaking of "conventions based on the test of experience," a meagre comfort to one who has grasped that any experience presupposes already certain principles *a priori* as the very condition of its possibility.

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[1] There are only three possible cases, all analytical propositions, of course, being *a priori*.

[2] A further criterion is required, of course, to draw a borderline between mathematical and philosophical propositions in the strict sense. This somewhat difficult problem, however, may be left aside, not being relevant for the context.

[3] Dr. Stonier describes his essay *expressis verbis* as an attempt to solve with regard to economics the fundamental question of critical philosophy, *i.e.*, how is economic science at all possible? In Dr. Kaufmann's case this agreement might be somewhat obscured by the use of a different vocabulary. Trying, however, to get the gist of his *Philosophische Grundueberlegungen* (I, ch. I and passim) I do not find an essential divergence.

Dr. Stonier, on the other hand, does not attempt to give an answer to this question; he is only entangled in a fierce polemic against those who wish to claim a general phenomenological intuition (Wesensschau) as a source from which philosophical principles flow. The fact that such an intuition obviously does not exist is sufficient reason for him to conclude that therefore these principles must be of analytical nature (pp. 26–27). Such a hasty conclusion—of which incidentally Dr. Kaufmann also seems to fall a prey—does not lack a certain boldness after the life work of Kant, Fries, Apelt, Nelson and other philosophers has been mainly devoted to showing that the distinction "either logic or intuition" is not a complete disjunction in the logical sense, even if one takes into account that their positive contribution in demonstrating a non-intuitive source of philosophical knowledge has not yet received the attention which it deserves.

We need not go, however, into greater detail with regard to this question how to justify the basic principles of a science the solution of which question anyhow goes far beyond the scope of this journal. We will restrict our attention to the preliminary question whether the two authors have succeeded in exposing the basic principles of economics in a satisfactory way, since a clear conception of the principles involved is, of course, a necessary condition for the success of any philosophical attempt to solve the enigma of their origin.

Dr. Stonier enumerates some conceptions *a priori* which underly the science of economics as necessary conditions, but he does so only in a casual way, giving examples and not making any claim to completeness. These are: the logical *principium identitatis*, the analytical statement that each proposition has a subject and a predicate and finally the conception of the "cognizant subject in general" (*das erkennende Subjekt ueberhaupt*). The meaning of the latter remains mysterious; the reader is only enabled to guess that it must be a somewhat tricky subject, because on p. 20 he is told " that no synthetical propositions or rather no propositions at all are possible about it." Thus it cannot be helped that one has to pass silently over this secret.[1] With regard to the other two points, however, Dr. Stonier is undoubtedly right in stating that they are basic premises for economics, just as they are for any other intelligent effort, but to state such a triviality seems a somewhat poor result for the philosophical apparatus which he has set in motion. Implicitly Dr. Stonier seems to share this opinion, because in the course of his main argument he does not rely on this discovery. His main point is to show that Mises is mistaken in asserting pure economics (catalactics) to be a science *a priori*. This he tries to do by pointing out the improbability of a phenomenological intuition of economic activities. Now, as far as I am aware, Mises has never claimed to be in possession of so sublime a source of knowledge ; all that he means, if I understand him rightly, is that economics is based on certain principles which cannot possibly be derived from experience. The question whether this is so or not can be decided independently of the problem of the origin of such principles. Stating merely that phenomenological intuition is not likely to be the source misses the point, especially if one keeps in mind that such an intuition need not be the only possible source from which these principles flow.

What are then these principles of economics which are said to be of an *a priori* nature ? Do we find in Dr. Kaufmann's book a better guide ? Glancing over those propositions which Dr. Kaufmann describes as the basic principles of the theory of marginal utility with which he deals *in extenso*, we are surprised to find neither an explicit formulation of that proposition, which generally is considered as the very corner-stone of economics, and which therefore always stood in the limelight of discussion—the economic principle—nor an attempt to give concrete expression to certain other laws of philosophic origin which are applied in considering interactions of human beings in a society. Hence logical completeness in enumeration is absent. With regard to those propositions which are explicitly stated, one will find that they are expressed in a somewhat involved and hyper-elaborate form. Giving the general meaning of the principle of marginal utility as a principle which regulates the *valuation* of the various units of commodities which are at the disposal of an individual (pp. 258–259),

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[1] One can hardly blame Dr. Stonier for this lack of clarity since he only repeats the words of his teacher Rickert without making an effort to examine their meaning. Had he done this he might perhaps have discovered that the air of mystery which surrounds the " cognisant subject in general " has its origin largely in the definition by which Rickert has introduced this subject into philosophy. According to him it is a subject which has cognisance of subjects which have no cognisance of themselves, and the question may be asked whether the " subject in general " is cognisant of itself or not : If it is it belongs to the subjects which have no cognisance of themselves, if it is not it has cognisance of itself by definition. In its logical monstrosity it shares the fate of that unhappy barber who, according to Bertrand Russell, is defined as the barber who shaves all people who do not shave themselves and who, whether he shaves himself or not, cannot help to act contrary to his definition.

Dr. Kaufmann admits himself that his way of putting it is somewhat different from the traditional formulations.[1] His only reason for this departure from common usage is that he hopes to avoid misinterpretations. He has neither given a logically stringent proof that this change in terminology was necessary, nor will he be able to show without much twisting that it agrees with the simple ideas which those who created the marginal utility theory actually had in mind. Instead of deliminating the basic principles by a careful process of logical (axiomatic) analysis from the actual straightforward usage which the founders of the theory made of them, Dr. Kaufmann employs the more haphazard method of casually picking out paraphrases from rather recent works of the marginal utility school (p. 264), naïvely assuming that the truth contained in books increases with the number of the year of their appearance.

It is, however, an elementary experience in the history of sciences that their development does not show an unbroken line of progress, but that periods of great achievement are often followed by periods of stagnation or even serious regress. Especially if the progress in a science be hampered by philosophical difficulties the nature of which frequently is not thoroughly understood, very often mere palliatives will be used instead of methods which really remove the root of the trouble. In such cases one will witness that terminology and methodology of a science become increasingly complicated, subtle distinctions far removed from a natural usage of the language will gradually usurp the place of straightforward definitions, the old cycles of theoretical thought become more and more replaced by elaborate and artificial epicycles, and it will not be long before the simple truth is eliminated from the body of doctrines which its originators ventured to formulate with unrestrained straightness, not being aware of those deep-rooted difficulties which made their followers stumble. Lack of vigilance in that respect therefore usually has the serious consequence that one misses the thread and becomes hopelessly entangled in a labyrinthic muddle. This happened to Dr. Kaufmann, who, missing the gist of the economic principle, landed, like many before him, in a variation of Weber's celebrated theory of the idealised types.

As we have mentioned already, Dr. Kaufmann has failed to give an explicit exposition of the economic principle, but there is sufficient evidence to infer his opinions in an indirect way. On pp. 265–266 he argues that it would be a serious methodological mistake to conclude from the actual decision of an individual as to which one of several of his conflicting wants had been of greatest intensity. " By this the appearance is created that acts of preference are explained by means of psychological data, whereas in reality only a new term has been defined which is equivalent to the act of preference . . . . The supposition that all ends relevant for demand—even in the case of one person only—could be arranged according to an order of their importance is a thorough prejudice " (p. 266). " It is not confirmed by experience that there exists an uniform quality with our feelings and wants that would enable one throughout to compare the intensities of psycho-physical conditions " (p. 265).

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[1] It is essential to note this difference. Usually the principle of marginal utility is thought of as to connect the *valuations* of an individual with his *decisions*. Dr. Kaufmann elaborates a different version maintaining, contrary to the solid opinion of the protagonists of the marginal utility theory, that the " scales of preference " are something entirely different from the intensity graduation of psychological data such as wants. This distinction is, however, merely a terminological misinterpretation of the somewhat ambiguous expression " scales of preference ". It serves to solve the problem of the nature of the economic principle—*i.e.*, the main problem on which the foundation of economics depends—by making it simply disappear. To maintain that the scale of preference implies no other than the idea of the act of choice creates the impression that the economic principle is nothing but the tautological triviality that the individual prefers what it prefers.

If Dr. Kaufmann, safeguarded by the precautions of an axiomatical investigation, would have analysed the actual reasoning of economists as to what principle underlies their conclusions as a necessary and sufficient condition, he would have found a proposition which tentatively might be formulated as follows :—

> An individual, who, in a situation of choice, is subjected to the influence of two conflicting motives (impulses) will decide in favour of the stronger of the two.

For this proposition it is not required that *psychophysical states of mind can be compared throughout* with regard to their intensity, but only that, *before making a decision* (choice), an individual has the possibility of arranging his motives and impulses, under the influence of which he is going to act, in order of their respective strength. In fact, if someone asks me *in abstracto* whether my love for my country is greater than my desire for freedom, I am somewhat at a loss how to answer, but actually having to make a choice between a trip in my country and the danger of losing my freedom, the order of intensities of my desire becomes only too determinate. So long therefore as Dr. Kaufmann does not prove stringently that while a decision is pending motives or impulses cannot always be compared with regard to their intensity, the second part of his argument fails to reach his objective.

The validity of the first part of his argument depends on the question whether the economic principle is an analytical or a synthetical proposition in the defined sense. Now Dr. Kaufmann admits himself that introspection with regard to the strength of motives in some cases is a possible source of information, so that the mere observation of an individual's behaviour on the market is not the only source of experience. Hence the conception " motive " or " impulse " is different from the conception " act of decision," the latter not being contained in the former, so that the principle in question must be a proposition of the synthetical kind. In fact, it would not be contrary to logic if, instead of the mere mathematical moment of relative strength, any other material criterion like greater ethical desirability, or something else of that kind, were to characterise the motive or impulse which proves decisive for the act of preference. This being understood, Dr. Kaufmann's contention, however, seems to be that only in those relatively rare cases where introspection has revealed the motives *beforehand* can we give an explanation of the individual's behaviour by connecting the relative strength of the impulses with the direction of the decision. Whereas in the large majority of cases where nothing beforehand is known about the motives, the *reverse* procedure of inferring from the actual behaviour to the kind of motivation would be merely tautological. This view which is most commonly held is indeed one of the most pernicious prejudices which hamper the understanding of the foundations of economics.[1] Why, we must ask, should it not be possible to conclude from the actions of an individual by means of a *synthetical* law what his motivation has been? Such a conclusion would deserve to be called tautological only if the principle were of analytical nature, which is not the case, as we have seen, and to assume that sometimes the principle is synthetical, sometimes analytical, according as to whether we are ignorant about the motivation or not, is a logical absurdity.

Dr. Kaufmann's failure to work out the economic principle by means of a careful logical analysis has other still more serious consequences. In economic writing one finds this principle generally formulated in a way which connects the act of choice with the greatest expected utility of the various possible actions. Logically such a formulation is a combination of the general principle as formulated above and a special *assumption* of an arbitrary and simplifying kind about the motivation of the individuals taking part in an economic process. Assumptions such as that the intensity of motives is graded according to the magnitude of the expected profits are of great utility for the construction of working models of economic processes which, when contrasted with reality, enable one to ascertain in what way the *actual* motivation of the individuals concerned deviates from the *assumed* one. The introduction of such simplifying hypotheses is an indispensable means of orientation in the perturbing variety of motives by which actual human behaviour is governed in the various possible situations.[1]

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[1] It appears that this misconception first was introduced into Economics by W. St. Jevons who in turn adopted it from Alexander Bain (cf. Bain: *The Emotions and the Will*, especially Book II, ch. VI: "The Conflict of Motives"). Bain states this doctrine with a completeness to which Dr. Kaufmann has very little to add: "The motives that influence living beings are so numerous that we should expect beforehand the occurrence of frequent collisions, when of course either no result ensues, or one of the forces gives way. This leads to the *denominating* of some motor states as stronger than others" (p. 396, 4th ed.). "The resulting volition discloses the stronger [sensation], and is the ultimate canon of appeal" (*ibid.*, p. 401). He cast it into the pointed form: "It is only an *identical proposition* to affirm that the greatest of two pleasures, or what appears as such, sways the resulting action; for it is this resulting action that alone determines which is the greater" (*ibid.*, 1st ed., p. 447, omitted in the later editions)—in which it was adopted by Jevons (cf. *Theory of Political Economy*, 4th ed., pp. 12 *et seq.*).

Jevons offers this quotation as confirmation of his view that the mind can compare in a significant sense motives with regard to their relative strength; it is odd to see him fail to realise that, by causing such comparisons to appear as a mere matter of denomination, Bain's doctrine rather undermines his position.

So long as one keeps in mind that such formulations cannot be taken as the basic principles of economics, but that they really are derived propositions combining a general law with certain hypothetical assumptions about reality, not much harm is to be expected. The philosopher, however, who naïvely takes such formulations for granted and omits to analyse them, to separate the general element contained therein from those merely hypothetical assumptions, runs into the serious risk of being completely misled with regard to the nature of these principles. He will not fail to observe that such seeming principles lack the generality which characterises principles in the legitimate sense; he will point out that there are exceptions to the rule, that not all human beings act as *homo oeconomicus* according to the rules of Hedonism, and he will not hesitate to bring all the rest of the arguments philosophers have not tired of levelling against economics since its beginning as a science. He will be misled in other words into mistaking the special limiting character of working hypotheses for a general limitation of the principle itself, which excludes its being a law of nature. And according to the *Weltanschauung*, which guides him in his ideas, he will either conclude that economics is no science at all for the reason that it leads to distorted views of reality, or he will take such a distortion as the very essence of economic methodology. He will claim that economics is by no means dealing with laws of nature, but with a kind of laws of idealised types which stand side by side with the ordinary laws of causality, and he will soon lose his way in thoughtful speculation about the nature of the former and their relation to the latter. Max Weber's theory of idealised types is the most famous and most fashionable example for the second type of reaction. Dr. Kaufmann—and still more Dr. Stonier—follow him wholeheartedly, adding only minor modifications to discuss which in detail, however, does not seem to be of much use. The whole basis of this elaborate structure becomes shattered if one only removes the condition of its genesis, i.e. the unsatisfactory analysis of the economic principle. If the various constituent elements out of which such pseudo-principles are made up be separated from each other, if the general proposition be carefully distinguished from all kinds of working hypotheses concerning the facts, then the limitations of the generality of the law will disappear, and the general principle will be reached " on which each individual, deliberately, blindly, or impulsively, adapts his conduct to the terms on which alternatives are offered to him by nature or by man," and it will appear that such a principle is identical, " whether we are dealing with problems of exchange, or with the assigning of exchangeable things to their ultimate uses, or with the turning of personal and inalienable qualities and powers, in obedience to impulse or deliberate purpose, along the various alternative channels through which they may flow," as Wicksteed has put it in his enlightened chapter on " Business and the Economic Nexus."[1]

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[1] Of wide scope is here the assumption that an individual chooses his objectives in a " rational way " as a " normal business man " does. The failure to separate this assumption from the general principle—under which, of course, irrational valuations fall too—leads naturally to the opinion that economic reasoning is restricted to " rational " behaviour and that an economist can only shrug his shoulders if he has to investigate the behaviour of individuals who in political, racial or religious fervour turn the traditional economic universe upside down.

This principle finally is nothing but an application of the general law of causality to the psychological conditions which are relevant for economics. It would be a task for philosophy to demonstrate in detail how this application is effected, what are its conditions, and how it is connected with other principles of philosophical origin (e.g. the principle of interaction) which we always apply in explaining the mechanism of economical or sociological processes. Such an investigation might give to social sciences and to economics in particular that firm foundation at which all research is aiming, but which so far has not been achieved.

HARRO BERNADELLI.

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[1] Cf. Philip H. Wicksteed : *The Common Sense of Political Economy*, Vol. I, ch. V.

Menger on Money[1]

This is the final volume of the collected edition of the works of the founder of the Austrian school undertaken by the London School of Economics. It gathers together practically all of Carl Menger's writings on money, and, to add to the value of the new edition, the editor, Professor Hayek, has included in the present volume a complete bibliography of Menger's known publications.

Menger did not write a great deal on money. The present collection runs to about 320 pages and contains his main theoretical work, the long article *Geld*, first published in the *Handwörterbuch* in 1892 and, in a new edition, in 1909. The remainder consists of a series of articles from the years 1889, 1892 and 1893 on the position of the Austrian currency before and after the reform of 1892, together with Menger's evidence before the Currency Commission of March, 1892, which preceded the reform.

Partly on account of their small volume, partly, perhaps, because of the way in which they were first published, Menger's contributions to monetary theory and policy have had—at any rate, outside their country of origin—less attention than they deserve. The fundamental changes which he introduced in methodology and in the theory of value led to the neglect of his no less important reformulations of the theory of money. Economists everywhere have, it is true, been familiar with the summary of his views on money contained in the *Grundsätze*, but it is in Austria more than anywhere else that his work (with that of Wieser) has been successfully developed. Professor Mises' treatise is based on it; and Vienna's recent work on fluctuations can be directly traced to the ideas of the older Austrians. Now that the concepts of the new Vienna school have begun to influence English economic thought, a re-examination of their origins becomes an exciting and profitable undertaking.

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Menger's article in the *Handwörterbuch* is still one of the best introductions to the modern theory of money. It is written in a pleasing style, dignified, yet free from the excrescences of the *Kanzleistil* common at the time it was written. In 115 pages, it presents most lucidly the main elements of monetary theory, firmly based on the theory of choice and exchange of the Austrian school; and it contains, moreover, stimulating hints for further work.

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[1] *The Collected Works of Carl Menger, Volume IV, Schriften über Geldtheorie und Währungspolitik.* No. 20 in the Series of Reprints of Scarce Tracts in Economics and Political Science. (London School of Economics. 1936. 332 pp. 10s. 6d.)

It is divided into 14 sections of unequal length and unequal interest. The first section gives an elegant formulation of the now accepted (though then still somewhat controversial) explanation of the origin of money out of the inconveniences of barter and the differences in the degree of acceptability (*Marktgängigkeit*) of different goods. The primacy of the medium of exchange function of money is duly emphasised and leads to sharp polemics, in section 2, against the legalistic interpretations of the Jurists and, in the subsequent three sections, against the 'étatists' who were later to find their chief exponent in Knapp. The necessity of this controversy may not have been obvious in England at the time it took place (it is more so now!) but the difficulty with which juristic interpretations die in German economic thought is justification enough for Menger's onslaught even to-day. Thanks largely to him and his successors, the economic definition of money is now much more taken into account in legal theory (as witness, for example, the attitude of Nussbaum) than it was before.

With all his opposition to the 'étatists', Menger does not ignore the powerful rôle of the state in the development of money. In sections 3, 4 and 5, there is a brief but penetrating analysis of the development of the coinage, of legal tender money and of the power of the state in relation to the usage of the market. These pages show Menger to have been more appreciative of the extent to which political intervention can alter economic arrangements than are many of his successors. Menger does not fall into their error of regarding only a liberal society as 'natural' and any departure from it as 'artificial'. He shows that political institutions are changeable and may come into conflict with social practice. Here, at any rate, Menger is eminently true to that 'neutrality' towards politics which he so persuasively urged on all economists.

The next four sections are concerned with the development of the subsidiary functions of money: to facilitate unilateral transfers, to act as a hoard and to facilitate the accumulation of capital. The discussion here follows well-known lines, but the description of the rôle of money in the capital market is, unfortunately very short and not as suggestive of further analysis as other parts of the article.

The tenth section introduces the famous concept of money as a price-index (*Preisindikator*). It is based, as one would expect, on the subjectivist theory of value and rejects any view of exchange value but that of an equivalence which arises in, and through, the act of exchange. Money becomes a unit of account, a convenient way of expressing that equivalence. This section should be read in conjunction with Wicksteed's analysis of the formation of the 'objective scale'. It forms one of the best short statements of the Austrian theory of monetary exchange.

Section 11 is the longest and, theoretically, the most important. It deals with money as a measure of the exchange value of goods: and no reader to-day can fail to be impressed with the extent to which much modern work is derived from Menger—how little it has advanced since he wrote. Menger first describes the advantages to which the possibility of a uniform expression of the exchange value of goods and rights through the agency of money gives rise. He exposes, however, the fallacy which often arises through the belief that money is a measure of value in a more definite and technical sense, such as is applied to the measures of weight and physical dimensions. Price must simply be regarded as a *relation* between money and goods which is, moreover, changeable. The exchange value of goods, expressed in terms of money, is subject to numerous influences which vary from time to time and from place to place : it may, therefore, be an inadequate guide to the means or results of economic activity.

The observed inadequacy of money as a ' measure of value ' leads, then, to a discussion of the problems of a stable purchasing power (*aüsserer Tauschwert*) of money and of ' neutral ' money, or money with a stable inner exchange value (*innerer Tauschwert*). Menger concludes that a good with a stable purchasing power cannot be found. A good of that quality would require stable exchange relations between all goods, *i.e.*, stable prices ; and if those could ever be achieved, any marketable good could serve as a measure of value. Even the measurement of changes in the purchasing power of money is shown by Menger to be difficult if not impossible of achievement. He discusses lucidly the theory underlying the compilation of Index-Numbers, shows their limitations, but admits the important practical use to which they may be put.

There follows an explanation of the problem of the inner exchange value of money. Menger shows that while the exchange ratio of any two goods (including money) is determined by influences lying on the side of both, changes in a given exchange relation may be brought about by influences operating on the side of one only. More particularly, prices may vary as the result of changes occurring solely on the side of money. To introduce that distinction is to enquire into changes in the inner exchange value of money.

The occurrence of such changes is seldom recognised. Only in times of violent fluctuations do most people become aware of alterations in the value of money. Economic Science, however, has long since understood that changes occur in the supply and demand relations of money which affect prices from the side of money. Recognition of these influences leads to the search for money with a stable inner exchange value or, in modern parlance, ' neutral ' money. Such money would not prevent price fluctuations ; but since its own value would be stable, all changes in prices could be regarded as being caused by influences originating on the ' side of goods '.

Menger believes that the problem of the ' neutralisation ' of money is both theoretically and practically capable of solution. He emphasises the fact that there is no good in existence which has a stable inner exchange value and which could, therefore, serve as neutral money.

But the problem of practical policy is that of adjusting the supply of money to the demand conditions, thereby neutralising the influences on price-formation which arise on the side of money.

The first condition for such a policy is to devise some means whereby 'autonomous' monetary influences could be recognised and measured. Menger discusses the attempts made to devise such means. These have generally taken the form of statistical representations of a general level of prices and of the measurement of changes in it. Menger shows clearly the theoretical objections to that concept. He demonstrates that its use is based on the assumption (tacit rather than explicit) that price-movements are compensatory in character. Only if changes in the prices of individual goods lead to completely compensatory movements in the prices of other goods (a condition which can be shown to depend on very exceptional demand-elasticities) can changes in the general level of prices be taken as an expression of changes in the value of money. Thus, if Menger's work had been better known in this country, there would not have been the surprise which greeted the attack on the concept of the general level of prices a few years ago! Menger admits, however, that, for practical purposes, measurement of changes in price-averages may be a useful approximation (since large changes are more *probably* caused by monetary influences) and that, taken together with other evidence, it may form a useful guide for monetary policy.

The next two sections give by way of summary a definition of money and discuss once again aspects of legal tender money. The concluding chapter, fragmentary though it is, is, perhaps, the most stimulating. It discusses the demand for money and one reader, at any rate, cannot help feeling that recent work would have been much further advanced had it started from the point at which Menger left off. He shows the demand for money to be nothing more than the demand of individuals for money, *i.e.*, for the services which money renders. It should, therefore, be investigated in comparison and contrast with their demand for other goods. It may not be too fanciful to see in the brief mention of the causes which may influence the demand for money (p. 108) some of the seeds of the work of Myrdal, Lindahl and Hicks, to mention only a few contemporary writers in that field. Thus, Menger can be seen as the forerunner both of the neutral money theorists (*e.g.*, Mises, Hayek, Koopmans) as well as of those who are now developing monetary theory by linking it up with the theory of anticipation.

* * * * *

The reform of the Austrian currency and the problems which led to it form one of the most interesting chapters in modern monetary history. Since 1858, Austria was officially on a silver standard, but convertibility existed only for a short time. Political and financial instability in the earlier years and an over-issue of paper money in the later years of the subsequent period put a premium on silver which, even in 1871, stood at over 20 per cent. In the 'seventies, however, there occurred the remarkable fall in the price of silver which diminished the premium and eventually, in 1878, made it disappear altogether. The continued fall in the price of silver led, in that year, to a sharp rise in the imports of the metal for the purpose of coinage on private account.

To prevent a devaluation, the Austrian authorities decided, in 1879, to suspend the free coinage of silver *Gulden*. From that year onwards, as Menger points out in an article written in 1889, Austria was on a limping standard: its silver coins had a greater value than their silver content, due to the 'scarcity value' which the suspension of coinage on private account and the restriction of the public coinage gave them. The measure of 1879 represented, then, a kind of deflation. It was perhaps justified by the possibility of an excessive influx of silver which would have created difficulties at a subsequent date when the demonetisation of silver and the adoption of a gold standard were being envisaged. Nevertheless, as Menger shows, it was a measure which possessed certain dangers: it had been instituted by decree and not by legislation; and by a similar decree, re-introducing the free coinage of silver, the government was in a position to lower the value of money by one-fifth.

Free coinage remained, however, suspended, and the disparity between the value of the silver *Gulden* and the metal grew constantly until, in 1892, the cost of production of a silver *Gulden* (the price of the metal in London plus cost of transport, etc., plus cost of minting) stood at, roughly, 77 Austrian *Kreuzer* as against a nominal content of 100 *Kreuzer*. The difficulties and dangers of that situation were well described by Menger in his *Beiträge zur Währungsfrage* and in an excellent short lecture, *Von unserer Valuta*. He points out the inconveniences of trade, the isolation of Austria from the international money and capital markets, the constitutionally precarious nature of the suspension of the free coinage, the persistence of an excessive note circulation which might, at any time, lead to a reappearance of the silver premium and, finally, the likelihood of a continued fall of silver which might completely destroy the basis of the Austrian currency. It was this last danger which, influenced by the 1887 Gold and Silver Commission, Menger regarded as the most serious.

A reform of the currency had, thus, become inevitable; and by 1892 the standard to be adopted had become a subject of intensive discussion. Menger contributed to it a series of articles as well as some very lucid evidence before the Enquiry Commission. After considering at length the advantages and disadvantages of a pure silver standard, of bi-metallism and of a gold standard, he decides in favour of the last.

That was, indeed, the opinion of the majority of experts at the time. The only points of controversy were the effects of an attempt by Austria to adopt the gold standard and the parity which should be established. Menger was strongly of the opinion that large gold purchases by Austria (estimated at between 250,000–300,000 Kg.)

would seriously raise the price of gold. He believed, nevertheless, in the desirability of the universal adoption of a gold standard and suggested well-known means for economising gold and for diminishing the tendency for its price to rise. For Austria, in particular, he suggested that the probable price-raising effects of the gold purchases should be taken into account when fixing the ratio to be adopted.

His own opinion, strongly expressed on several occasions, was in favour of a ratio which would mean neither a ' heavy ' nor a ' light ', but a ' just ' *Gulden*. In other words, he wanted a parity which would disturb as little as possible the existing distribution of wealth, which would be based on a careful examination of Austria's balance of payments, and which would be most likely to remain stable. The first two considerations inclined him to a ratio of 2.10 francs to the *Gulden*, but in view of the probable rise in the price of gold, he urged that if a ratio had to be adopted at once, it should be a higher one. Menger believed, however, that the effects of Austria's reform on the price of gold could not be correctly assessed in advance and that no ratio should be adopted until the completion of the gold purchases was well in sight.

Unfortunately, his view was not adopted. Already, in June, 1893, Menger was able to show the harm which had been done by the hasty fixing of the parity and to point out that, in spite of an initial success, the reform had got into difficulties. It was true that the currency stabilisation loan had found a good public, but the parity of 2.10 francs, fixed in August, 1892, was rapidly being stultified by a rising premium on gold which, in May, 1893, reached over 3 per cent.

Menger finds the causes of this movement in a sudden worsening of Austria's balance of trade, in an untimely conversion of Government loans which caused an outflow of foreign funds from Vienna and in the large purchases of gold abroad. He believes that a rise in the premium could have been avoided. As soon as a premium occurred, the purchases of gold and foreign exchange should have been stopped ; indeed, the authorities should have proceeded to sell in order to support the exchange. He regarded the removal of the premium on gold as the first condition for a resumption of the currency reform, although he was fully sensible of the sacrifices which it would entail. Menger's advice had not been heeded before 1892, nor was it followed afterwards. The result was that Austria never had a full gold standard, that the premium on gold remained and even increased, and that the resumption of cash payments, originally envisaged for 1896 or 1897, was beginning to be seriously discussed when the War once more threw the currency into the melting-pot.

The present volume is also the last in the first series of reprints of the London School of Economics. The great debt of gratitude under which the editors have put all social scientists, is already being increased by the issue of a new series. May it be as successful as the old !

ERICH ROLL.

" The New Survey of London Life and Labour "

WHEN the history of the School comes to be written, *The New Survey of London Life and Labour* will be regarded as one of its most characteristic offspring. It is a true symbol of what the School stands for. One is reminded of those words with which Professor Pigou opens his great treatise on *The Economics of Welfare* : " Wonder, Carlyle declared, is the beginning of philosophy. It is not wonder, but rather the social enthusiasm which revolts from the sordidness of mean streets and the joylessness of withered lives, that is the beginning of economic science." The New Survey is the intelligent man's guide to the mean streets and withered lives of London. A vital part of the education of students of the social sciences will be missing if they are not acquainted with what this guide has to tell them.

Begun in 1928, the undertaking was not completed until 1935. Valuable financial assistance was obtained from the Laura Spelman Rockefeller Foundation Memorial, the Ratan Tata Research Fund and several Trustees, Companies and private individuals. Sir Hubert Llywellyn Smith directed the research work ; and the whole scheme was supervised by a Consultative Committee of experts. The results occupy nine volumes[1] ; and there is hardly a phase of the life of the 5½ million people in the metropolis which has escaped the exploratory zeal of the investigators. In the panorama that spreads before us we may distinguish three prominent landmarks—the standard of living, the manifold ways in which people earn their livelihood and the varied pursuits of their leisure hours. Masses of detailed information, much of which was collected at first hand, have been carefully sifted and used to give as accurate an account as possible of these three themes. Students interested in the sources will find their curiosity more than satisfied by the statistical tables inserted at the end of the chapters to which they relate. There is abundant justification for Sir Hubert Llywellyn Smith's concluding words : " it may be claimed that the laborious and exacting team-work of the past six years has at least enabled a definite answer to be returned to what in the first volume was described as ' the insistent questions which are in all men's minds.' In what direction are we moving ? Is poverty diminishing or increasing ? Are the conditions of life and labour in London becoming better or worse ? "

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[1] *New Survey of London Life and Labour.* 9 Volumes. 1930– 1935. P. S. King & Son, Ltd. 17s. 6d. each volume. (Volumes I and II were reviewed in ECONOMICA (Old Series), Nos. 33 and 35.)

The answers to the fundamental questions relating to " the condition of the people " are set out in Volumes III and VI (*The Survey of Social Conditions*). Volumes IV and VII contain eleven excellent maps, ten of which make up the poverty series (excluding the key maps), and the other illustrates overcrowding. The aptly-chosen scales and colours make these maps a valuable illustrative aid to the text. The provisional conclusion reached in the first volume was that, assuming the improvement during the period of 40 years to have been uniformly distributed, Charles Booth's percentage of poverty would be reduced from over 30 per cent. to less than 8 per cent. This was a first approximation, and it needed to be corrected and amplified. The survey made by Booth has, accordingly, been repeated under modern conditions in two separate areas, the East and the West of London. The " Eastern Survey Area," with a population of nearly 2½ millions, embraces not only Booth's " East London " but also a group of six boroughs (West Ham, East Ham, Barking, Leyton, Walthamstow and Tottenham) beyond the Eastern County boundary, as well as Woolwich, Bermondsey, Deptford, Greenwich and Lewisham in the south-east. The Western Area includes a population of 3,204,000, covering the part of the County of London other than the Eastern Area together with the boroughs of Hornsey, Willesden and Acton.

I

The foundations of the analysis are the House Sample and the Street Survey. Of the million families in the Survey Area 30,000 were selected at random for detailed examination. In Professor Bowley's hands this method has proved a most effective instrument of analysis. New light is thrown not only on the extent and distribution of poverty but also on the constitution, earning power and expenditure of working-class families. This wealth of interesting material brings a sharp reminder of the serious gaps in our public statistics. As Professor Bowley points out, " there is no knowledge for Great Britain or for any large district as to the proportion of men receiving wages of different amounts, that is, of the general distribution of wages, nor of the relative numbers of unskilled, semi-skilled and skilled, nor of the prevalence of piece- as contrasted with time-rates." It is discouraging to think that this information can only be obtained from special sample inquiries.

The Street Survey stands in the Booth tradition. In the Director's words, " the main object is to classify the population, street by street, according to a series of economic and social grades, on a basis fairly comparable with the classification introduced by Charles Booth." As in the first survey, the data on the cards—covering 26,000 streets and sections of streets in the new Survey Area—were furnished by School Attendance Officers, their status and close knowledge being a guarantee of approximate accuracy. Owing to the profound social changes of the last forty years it was necessary to merge some of Booth's classifications so as to give a group of four divisions, namely, Poor, below the Poverty Line (P), Unskilled (U), Skilled (S) and Middle Class (M). Refinements were also introduced into the study of the geographical distribution of poverty. Whereas Booth had been obliged to use the unsatisfactory concept of a "mixed street," i.e. a street containing a mixture of various grades of poverty and therefore not assignable to any specific division, Sir Hubert Llywellyn Smith has been able, by adopting a more minute sub-division, to differentiate every street section according to its particular degree of poverty.

The Street Survey is quite a different method of analysis from the House Sample; but they have given results which are consistent in a remarkable degree.

Before embarking on a statistical analysis of poverty it is important to have a clear definition of what one is really trying to measure. Those responsible for the New Survey refused to venture on to shifting sands in an endeavour to relate "grades of poverty with degrees of happiness." "The social classification attempted by Charles Booth and the New Survey have regard solely to material well-being and not to happiness, and the chief measurable element in that well-being is command over the necessaries of life." The poverty line of 1890 which was 21 shillings a week for a "moderate family" becomes approximately 40 shillings when translated into the 1928–30 equivalent. Any attempt to allow for qualitative changes in the level of living and alterations in people's idea of a minimum standard would have made comparisons impracticable. But a useful distinction is drawn between "static" and "dynamic" elements in poverty, the latter denoting a painful retrogression from a previously higher standard. It must be remembered, too, that the Survey deals with social conditions as they existed immediately before the recent trade depression.

The House Sample tells us a great deal about the relative importance of different causes of poverty. If we assume, not the actual income of families in the week of the investigation but the full-time income they would normally receive, a half of the poverty of East London families was due to illness and old age. When cases of unmarried women under 65 living alone and broken families where the bread winner is dead are included, then no less than three-quarters of all families in poverty have been accounted for. In Booth's time the chief cause of poverty was low wages. To-day this applies only to the condition of those men who cannot get the wage usually paid for unskilled labour in the district. The effect of the world depression is shown by taking the earnings in the week of investigation as the basis: the proportion of families in poverty in the East then increases from 6.3 to 11.0 per cent.

One of the general results of the Street Survey is that poverty is becoming more and more dispersed. The population of streets coloured blue, i.e., where the bulk of the people were in the poverty grade, was only one-fifth of the total population of the Eastern Area classed as poor. The corresponding proportion in Charles Booth's day was over three-fifths. The ugly pockets of chronic poverty still remaining are due chiefly to physical obstacles to freedom of movement. For example, "bounded by Limehouse Cut to the south, the gasworks to the west and a maze of railway lines to the east is the notoriously poor and degraded area formerly known as the 'Fenian Barracks' which was the subject of a vivid description by Charles Booth and still maintains something of its old reputation." Another significant fact is that there may be a general decrease of poverty and at the same time a steady deterioration of social grade. The main reason for this is the absolute shrinkage of the well-to-do sections of the population in the areas concerned, e.g. South Hackney, Stoke Newington, and part of Deptford, Greenwich, Woolwich and East Ham.

One in four of the men and women over 70 now spend their days in poverty compared with one in three in Booth's East London. This improvement is due largely to the old age pension. Housing and especially the need for slum clearance is described as being "still the dominant social question of London." The Table of acute overcrowding on pp. 251–2 of Volume III deserves the most earnest attention. How many people realise that between 1921 and 1931 intense overcrowding (designated by more than three persons to a room) actually increased in East London from 2.8 per cent. of the population to 3.4 per cent.? Rates of increase were recorded in no less than twenty-one boroughs, the worst case being West Ham (2.3 to 4.6 per cent.). Congestion is by no means confined to the East. On the contrary, of the 76,400 persons in the whole of the New Survey Area living in districts with an average density of 1.75 and over to the room, the majority, namely 48,000, are to be found in the Western Area. Volume VI, which is devoted to Social Conditions in the Western boroughs, contains an important chapter on Housing by Mr. Arthur Llywellyn Smith. Its conclusions may conveniently be taken as summing up the position before the current boom in building. Of the 332,000 new houses built in Outer London in 1920–32, about two-thirds were the result of private enterprise. Most of the latter, being non-assisted, were not available for the working classes. Building by private entrepreneurs leads to a migration of middle class people to the suburbs; but the houses which become vacant are too big for working class families. The workman in inner London is obliged to take either a flat in a block or a share in a tenement house. Those who become tenants of the cottage estates built by the London

County Council are drawn from a much more prosperous stratum than the people who enter block buildings in central districts. The outward migration, instead of relieving congestion, aggravates the evil of " tenement houses." Let it be remembered that the vast majority of the families above the poverty line can afford one or two additional rooms. One of the urgent social tasks of our time is to meet their needs through an ambitious programme of slum clearance. We may well wonder how much the building boom of the last three years has contributed to an alleviation of overcrowding in poor districts. The Survey pleads for " firm, intelligent and sympathetic management of house property." In practice, however, firmness is not often tempered with sympathy. A long-term Government policy is indispensable if the disgraceful conditions of overcrowding in urban communities are to be eliminated.

According to the Street Survey the proportion of persons in private families falling into the poverty grade was 7.5 per cent. in the Western Area compared with 12 per cent. in the East of London. The difference is surprisingly small, and is explained by the fact that each of the areas comprises a group of boroughs ranging from middle-class to poor. The Western boroughs have certain marked characteristics. The proportion of middle-class people is 23 per cent., compared with 11 per cent. in the East ; the average family is smaller, owing to the greater frequency of " families " of one or two persons ; and the average rent of working class tenements is somewhat higher. Divided houses and flats represent 45 per cent. of the total compared with 23 per cent. in the Eastern Area ; and the separate cottage is only half as prevalent. Old age and excessive rent have more to do with poverty in the West than in the East. There are districts in North Kensington and Finsbury which are quite as bad as parts of East London. Sir Hubert Llywellyn Smith sums up in the following words : " If the conditions of life and labour found by Charles Booth in the London of 1889 had continued to prevail the total number of persons in poverty in 1929 would have been upwards of a million and a half instead of less than half a million."

It is illuminating to compare the London Survey Area with other towns. One in three of the children under 14 in East London in 1928–9, and one in four on Merseyside in 1929, were living in overcrowded conditions. The proportion of working-class people found below the poverty line in the week investigated was 9.1 per cent. in the London Survey Area (10.7 per cent. in the East and 7.8 per cent. in the West), 16 per cent. on Merseyside (1929–30), and 20.7 per cent. in Southampton (1931). No less than 23 per cent. of the children under 14 on Merseyside were living in poverty, compared with 16 per cent. in East London. The same minimum standard was used in all these inquiries. The greater amount of poverty on Merseyside than in London is explained by the fact that in June, 1929, 16.5 per cent. of the insured population of Merseyside were out of work, whereas in the London Survey Area unemployment was as low as 4.8 per cent.

II

In weighing up the results of the inquiry into poverty some general considerations may be suggested. There are two definitions of the number in poverty which must be distinguished. On the one hand, we may find out how many people at a given date *would be* poor if they spent all their income and saved nothing voluntarily; on the other hand, we may wish to determine the number of persons at the same date who *are* poor when allowance is made for their supplementary incomes and private savings. These are quite separate criteria; and, though they might give identical quantitative results, the same people would clearly not be below the poverty line in the two cases. The second test is the more realistic; but it is extremely difficult to obtain complete and reliable data. Social investigators have hitherto been content to apply the first test.

The London Survey assumed that savings play a negligible part in the domestic budget of families around the poverty line. All kinds of pensions, including old-age pensions, were included as income. Net income was arrived at by subtracting necessary expenses for compulsory insurance (which did not exist in Booth's time), travelling and rent. Two important assumptions were made: first, " that the whole of the family income is available to satisfy the minimum needs of its members as a first charge upon it," and, secondly, that supplementary income (that is, income of which no particulars were given on the cards) is of no importance in the lower ranks of the working class.[1] It is important to realise what this criterion involves. To the extent that a family saves other than through compulsory insurance, for example, through private insurance or savings clubs, the first assumption is affected. On the other hand, more especially in the case of old people, any drawing on previous savings or the receipt of money from relatives would be an addition to current income. It is possible that some families found by the New Survey to be just above the poverty line were in fact saving (or, in other words, postponing consumption) on a scale sufficient to bring their current command over necessaries below the minimum; whereas other families classed as poor would be above the poverty line if their supplementary income (due to abstinence in earlier years) had been included.

The habit of paying a weekly sum towards insurance and savings clubs is widespread even among the poor. Some evidence of it appears in the revealing accounts inserted at the end of Volume IX of the

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[1] " It is not possible by any purely voluntary inquiry, which is not of an inquisitorial nature and does not admit of verifying the information supplied, to ascertain with any degree of accuracy and completeness the amount and nature of the supplementary income of old-age pensioners, other than that derived from poor relief." *The New Survey*, Vol. III, p. 198.

Survey of how the wives of Bermondsey dockers manage on the irregular earnings of their husbands. Five out of the six families described paid a weekly contribution towards insurance ranging between 1s. 8d. and 3s.; and in two cases there was an additional outlay (2s. 6d. and 3s.) on clubs. It is true that the clothing allowance in the Survey's minimum standard may be claimed to cover expenditure on clothing clubs. But no notice was taken of the weekly sums paid to the industrial assurance agent to avoid the stigma of a pauper's grave. One adjustment which the New Survey was able to make gave noteworthy results. It was first assumed that the earnings and other income of all members of the family were always pooled to meet common expenses; but, as the Survey points out, "there is no evidence that even in cases of necessity adult sons and daughters pool their wages directly or indirectly in a common purse." When such children's earnings were ignored, the number of *families* in poverty in the Eastern Area increased from 63 to 82 per thousand in a full-time week and from 110 to 137 per thousand in the week of the investigation. Our knowledge of the problem of poverty would be further improved if social investigators could supplement their usual analysis with the more direct test. If the poverty line were fixed at a higher level, it would be all the more necessary to have information about savings and supplementary income.

This leads us to examine the adequacy of Professor Bowley's minimum standard in the light of other investigations. The Committee on Nutrition set up by the British Medical Association recently published its conclusions on "the minimum weekly expenditure on foodstuffs which must be incurred by families of varying size if health and working capacity are to be maintained."[1] A glance at the following table will show to what extent the scale adopted by the New Survey falls short of the standard laid down by the British Medical Association.

Bowley[2]

(Adult Male's Calorie Requirements taken as 100)

	Man-value calorie coefficients
Male 16 or over	100
Boy 14 " "	85
Female 16 " "	85
Girl 14 " "	80
Child 12 and under 14	50
" 10 " " 12	50
" 6 " " 10	50
" 5 " " 6	50
" 3 " " 5	33
" under 3	33

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[1] *Report of the Committee on Nutrition* (British Medical Association), 1933, p. 5.

[2] *The New Survey*, Volume III, Appendix II, p. 433.

British Medical Association[1]

(Adult Male's Calorie Requirement taken as 100)

	Man-value calorie coefficients	Mean cost coefficients
Adult male	100	100
Boy 14 or over	100	100
Adult female	83	83
Girl 14 or over	83	83
Child 12 and under 14	90	90
,, 10 ,, ,, 12	80	80
,, 8 ,, ,, 10	70	71
,, 6 ,, ,, 8	60	60
,, 3 ,, ,, 6	50	59
,, 2 ,, ,, 3	40	54
,, 1 ,, ,, 2	30	47

The calorific needs of children between the ages of 2 and 14, according to the British Medical Association, rise in steps from 40 to 90, whereas in the New Survey's scale children between 3 and 5 years of age are assessed at 33 and those between 5 and 14 are all given 50. The Survey adds 10 per cent. to the food allowance of dockers owing to the heavy nature of their work. Professor Bowley admits that his standard " leaves the value for children aged 10 to 14 rather low, while that for ages from 5 to 7 is rather high. On the average for these nine years it is only slightly below Atwater (53) and Holt (57). Only a very small proportion of the families are affected at all significantly. The uniformity from 5 to 14 was originally adopted to facilitate calculation."[2] The British Medical Association allows 2,550 calories per day, giving a " man-value coefficient " of 75, for an old person over the age of 65, whereas the New Survey's ration for him is 2,000 calories which works out at about 60 per cent. of the needs of an active adult male.

These striking differences cannot be glossed over lightly. An adult needs about 20 calories per day per pound of body weight ; but an infant requires 50 calories per day per pound of weight because the food must provide not only for expenditure of energy but also for growth. The British Medical Association Report stresses the need for adequate provision of milk for children. In its specimen diet for a child between 2 and 3 years of age it allows seven pints of milk per week ; but the New Survey specifies 2½ pints weekly for a child under 5.[3] The British Medical Association child of 2 to 3 years has a ration costing 2s. 9½d. per week, at prices observed in a cheap market in Stockton-on-Tees ; the New Survey's infant of under 5 years is fed at a weekly cost of 2s. 4d. at London prices. We must conclude that the New Survey has under-estimated the calorific requirements of children under 14.

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[1] *Report of the Committee on Nutrition*, p. 42.

[2] Volume III, Appendix II, pp. 433–4.

[3] A recent publication on " The Nutritive Value of Milk " (prepared by the Ministry of Health Advisory Committee on Nutrition) goes even further than the B.M.A. and advocates a daily allowance of between 1 and 2 pints of milk for children.

Another difficulty must be faced in calculating the cost of these diets. The relative cost of the necessary number of calories is not, at all ages, in direct proportion to the calorie figures. A quotation from the British Medical Association Report will clarify this matter. "The food necessary and suitable for young children is relatively more costly per unit of energy than the food required by older children and adults, and therefore the cost of food per man-value per week is higher in families possessing a number of young children aged 1 to 6 than for families of the same equivalent man-value in which older children predominate. *The higher cost of calories in children's diets, as compared with the same number of calories for an adult, makes the calorie scale of family coefficients unreliable as a basis on which to calculate the minimum cost of adequate food for families containing young children.* The Committee has therefore examined the relative cost of children's and adult dietaries, and constructed a cost scale of family coefficients which is generally applicable, provided the basic cost of food per man-value is first ascertained."[1] The mean cost coefficients for different ages, worked out in this way, are shown in the above table. For persons of 10 years and upwards the calorie scale is an accurate indication of relative cost: the food required at different ages can be expressed in simple fractions of the basic diet per man unit. But foods of special quality bulk large in the diets of children under 10; consequently the cost scale is higher than the calorie scale. This important fact must be recognised in any estimate of command over necessaries. It might be suggested that the relatively higher cost of children's diets is offset by the economies which large families obtain by buying in bulk. This consideration is not relevant to families bordering on poverty: it only applies to those who spend much more than the minimum on food.

The New Survey was deliberately cautious in fixing its poverty line as a bare minimum. Recent work on nutrition must, however, be taken into account. Future investigators would do well to apply two tests: a standard which gives just a bare subsistence, and a refined standard, embodying the results of up-to-date research on nutrition and working-class expenditure, which is necessary to maintain health and working capacity.

III

The survey of London industries begun in Volume II is completed in Volumes V and VIII. The estimated number of people gainfully employed in Greater London in 1931 was 4,100,000; and four-fifths of this total are covered by the New Survey. A full account is given of the structure and technique of each industry, the impact of mechanisation, wages, hours and collective bargaining, the recruitment and training of labour, the incidence of unemployment and short time, and the strength of trade unionism.

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[1] *Report of Committee on Nutrition*, p. 41. Italics mine.

Forty per cent. of the occupied population of Greater London are engaged in food, drink and tobacco manufacture, wholesale food markets, the retail trade, chemical and allied industries, printing and bookbinding, leather and fur, laundry and water-transport, and these are reviewed in Volume V. The nature of the technical processes in each trade is described in detail; some readers may feel that too much space has been devoted to this aspect of the subject. Some trades and sections of industries have gone through a drastic technical revolution, while others are still noted for the survival of old-fashioned processes. Even to-day one-third of the laundries of London are of the cottage type. The small jobbing printer, working a press not very dissimilar from that used by Caxton, has by no means disappeared. Yet mechanisation has deeply influenced the lives of the workpeople in most of the above-mentioned trades. In the chapter on the Chemical and Allied Industries, Mr. Frederick Brown refers to the time-lag between technical progress in the "manipulative" trades (spinning, weaving, wood-working, etc.) and in the chemical industries. He suggests that the latter are only now entering on the new phase of automatic machinery and mechanical handling which has been changing the character of the "manipulative" trades for the last twenty years. This opens up an interesting line of thought which might well have been developed further. Technical progress has led to a relative increase in the employment of female and juvenile labour. In printing the proportion of women workers has trebled since Booth's day; but that of juveniles is unusually low for special reasons. One half of the females employed in the jam and sugar confectionery trade are under 20 years of age. Many readers would willingly sacrifice some of the load of technical detail given in the Industrial Survey in exchange for a few more interpretive comments on the economic aspects of inventions.

The development of several of these industries bears clear testimony to the influence of legislation. Few people nowadays believe that free enterprise is a sufficient guarantee of the purity of foodstuffs sold. The Sale of Food and Drugs Acts have incidentally encouraged the introduction of machines which eliminate human handling and exposure to air in the case of perishable goods. But, apparently the diet of the canine members of the family may still contain dubious substances. We are informed that, in the grain-milling process, after the mixture of grains has been passed through roller mills and "sieved through silk screens, ... the waste, middlings and even the extracted dust is kept and used for cattle fodder and dog biscuits." Among the London industries regulated by Trade Boards are sugar confectionery and food preserving, aerated water making, milk distribution, tobacco manufacture, laundry and fur. Conditions in the catering trade are described as " heterogeneous and even chaotic " ; but the attempts to put it under a Trade Board have not yet succeeded. Evidence is given to support the conclusion that " a high degree of success has been obtained in enforcing the Trade Board standards of wages in the London area."

Volume VIII covers land transport services, fine metal and instrument trades, hotel and catering, electricity, gas and water, and clerical work.

Trade Unionism is weak in many of the industries of London. It is true that railway, omnibus and tramway workers and the crafts of printing and bookbinding, saddlery and harness are highly organised. But at the other extreme we find the mass of commercial clerks, and workers in hotel and catering, electro-plating, musical instruments, road haulage, together with taxi-drivers and chauffeurs. While the bulk of the retail trades are ill-organised, the Co-operative Stores insist on Trade Union membership as a condition of employment. One of the most useful features of the Industrial Survey is the information about rates of wages, earnings, hours of work, holidays with pay and various amenities in each trade. There have been notable increases in real wages since pre-war days, particularly among the least skilled workers ; and, on the whole, the average length of the working day has been appreciably shortened. Gone are the good old days when a witness before the Select Committee on Hours of Shop Assistants (1886) could argue that stalls and shops must be open up to midnight and after, " on the ground that otherwise the sale of Ostend rabbits on a Saturday would be ruined."

Mr. E. M. Hugh Jones's study of the Hotel and Catering Trades in Volume VIII gives some interesting details about the tipping system. The " median " amount received in tips by men in hotels (about two-fifths of the whole number) is 60 shillings a week ; and the corresponding amount received by women (about one-third of the total number) is 20 shillings. In licensed restaurants the " median " value of tips for men is 50 shillings and for women 40 shillings ; and one learns that only a quarter of the waitresses in tea-shops get any tips. This system is open to serious objection, and it ought to be abolished. Sir Hubert Llywellyn Smith sums up the argument in these words : " As an element in remuneration the system has all the disadvantages of unregulated piece-rate payments, with the additional objection that the sums so received cannot be claimed as a right, and their amounts (unlike piece-rates) depend less on the quality of the service than on the caprice of the customer. The uncertainty from week to week of these additions to income must rob them of much of their value for the purpose of economical housekeeping."

Admirable summaries are provided by the Director of the Survey in the Introduction to each volume. The analysis of all the heterogeneous trades and services of the metropolis cannot be reduced to any generalisation. One thing, however, stands out: "The increased weight attached in modern industry to such qualities of character as steadiness and reliability as compared with technical skill in the old sense of the term. So likewise is the tendency for the demand for highly skilled craftsmanship to be more and more concentrated in those initial stages of a long chain of processes which are concerned with the making of the tools, moulds, gauges or other instruments of mechanical production; while the actual tending of the machines is performed by that most characteristic human product of the mechanical age, the semi-skilled 'process worker.'"

Several Special Studies are included in Volumes III and V. The following list illustrates the range of subjects covered: Unemployment and Poverty, The Homeless Poor, Old Age and Poverty (Sir H. Llywellyn Smith); Overcrowding (Sir H. Llywellyn Smith and Professor A. L. Bowley); The Street Trading Community (S. K. Ruck); The Hop-pickers' Migration (Sir H. Llywellyn Smith, P. G. Nash and M. I. Michaels); The London Housing Problem (Arthur Llywellyn Smith); Migration of Population (Dr. A. E. C. Hare and M. I. Michaels); Jewish Life and Labour in East London (Miss Henrietta Adler); Household Economy and Cookery in Relation to Poverty (Miss F. A. F. Livingstone); Mental Deficiency in Relation to Poverty (Sir H. Llywellyn Smith).

Miss Adler's interesting analysis shows that less than 30 per cent. of the Jewish working community of East London were born abroad, compared with 50 per cent. in 1891. There is still a keen desire to observe the Sabbath; and, despite disruptive forces, the influences tending towards cohesion are still uppermost. A whole network of religious and cultural activities is centred upon the "Beth Din," which is a kind of "court of domestic relations." It has daily sittings, and deals with the disposal of the estates of deceased persons, cases of breach of promise, slander, libel and compensation, differences between partners, employers and employed, and masters and apprentices. The House Sample revealed that no less than 20 per cent. of the Jewish earners in East London are owners or managers of shops, workshops or factories.

No survey of a large city can be complete without a study of the migration of population. The Birthplaces section of the British Population Census was omitted both in 1921 and in 1931 owing to the need for economy. Particulars regarding birthplaces were obtained for the New Survey through the House Sample. The analysis suffers from two weaknesses. It is limited to heads of households and applies only to boroughs to the east of the City of London and a small area south of the river. Post-war migrants include a large number of single men and women from the depressed areas who have settled in the newer industrial districts of outer London, and these are excluded. Within these limits, the results are instructive. Migrants are grouped into "urban" and "rural," skilled and unskilled, and then classified according to age and earnings. Useful comparisons are made between the migrant and the London-born sections of the population. One comforting fact emerges—the countryside is still the chief recruiting ground for the Metropolitan Police Force. London has been profoundly affected by the redistribution of population during the last decade; and we need to know much more about the volume, quality and direction of these streams of migrants.

IV

The last volume of the Survey is devoted to an account of the use of leisure. Between 1890 and 1928 the average number of hours making a full week's work fell by about 15 per cent. The decrease was 17 per cent. for unskilled labour and 12 per cent. for skilled. According to the House Sample, in 1929–30 two-thirds of the working-class families of London had a surplus of weekly income of 19 shillings or more above the poverty line: in Booth's day only two-thirds of the population managed to be above the poverty line. These broad facts are enough to show how much more important the use of leisure has become. In addition, it is estimated that over half the London workpeople are employed in industries in which an annual holiday with pay is customary.

People may occupy themselves during their free time in three kinds of activities, those in which the aim is definitely self-improvement, the non-cultural amusements which may be described as "passive," for example, going to cinemas, theatres or watching games, and "active" forms of amusement, such as dramatic and musical societies and athletic clubs. This last category has not undergone much change since Booth's time; but the wireless and the "talkie" have completely altered the character of "passive" entertainment. In 1931–2 there were 258 cinemas in the County of London, with a total seating accommodation of 344,000. This compares with 94 cinemas with a total seating capacity of 55,000 in 1911. The music-hall is not popular among the young people of the present day. In spite of the tremendous growth of mechanised amusement, individual initiative in the use of leisure has not been impaired. Outdoor sports, musical and dramatic societies, dancing and hobbies such as gardening, flower-growing and pigeon-fancying enjoy an increasing popularity; and the increase in the membership of evening classes organised by the University, the Workers' Educational Association, the London County Council and the Technical Institutes is an eloquent proof of the vitality of Adult Education.

When Charles Booth came to the problem of leisure, he singled out religion as the most important of "the other social influences which form part of the very structure of life."[1] He visited hundreds of churches to collect material for his seven portly volumes on Religious Influences. The English Sunday may still strike the foreigner as being incredibly dull; but it is very different from the Victorian Sunday. It is a pity that the New Survey was unable to devote even a chapter to an analysis of Organised Religion and attendance at places of worship.

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[1] *Life and Labour of the People in London*, 3rd Series, Religious Influences, I (1902), p. 4.

Readers interested in the wide variety of social organisations for adolescent boys and girls will find a detailed description in Part II of Volume IX. The inquiry concludes with four excellent chapters on "indulgence and delinquency," namely, Drink (by B. D. Nicholson), Gambling (J. Martin), Sex-delinquency (Mrs. C. Neville Rolfe) and Crime (S. K. Ruck). One or two brief comments must suffice. Mr. Nicholson's account of the drinking habits of the London working-class has that human touch which cannot fail to appeal to all readers. Perhaps this is explained by the fact that he visited 620 public-houses before he began to write it. We are told that "an average London family (excluding abstainers), with an income of from £3 to £3 15s. a week, spent (husband and wife combined) between 10 and 12 shillings a week on drink in 1934, and that, of this, by far the greater proportion was spent in the public-house rather than in home drinking." The drink bill of the London working-class is not much less than what they spend on house rent. Yet, if we take strength as well as volume into account, the consumption of alcohol per head has fallen by one-half since the time of Charles Booth; and annual convictions for drunkenness in the Metropolitan Police Area decreased from 85 to 15 per 10,000 of the population between 1913 and 1932. Three-quarters of the men and women frequenting public-houses in London are over 35 years of age; and there are hardly any unemployed. The long-run trend is clearly in the direction of sobriety.

Only a very small part is played by poverty in the causation of vice and crime: the emotional atmosphere of the home is more important. Stress is laid on the need for improvement in the methods of dealing with prostitution offences. A similar point is made by Mr. Ruck in his valuable analysis of Crime. There is much force in his plea that "more time and study should be devoted to the problem which is presented by every first offence than is possible in the hustled and jaded atmosphere of the ordinary police court."

In conclusion, a warm tribute must be paid to the careful and systematic way in which the statistical material has been set out in these volumes. The tables provide in convenient form an invaluable range of information. In bringing the monumental work to a close, Sir H. Llywellyn Smith strikes a confident note. "Of all the manifold impressions left upon my mind by the Survey, the deepest and most abiding is not the gravity and multiplicity of the still unsolved problems of London life and labour, but the energy and vitality of the human response to each new need as it has arisen. And so far there is no sign that the sources of this vital energy are running dry." The problems of the future will certainly not be less formidable than those met in the past. It is an old British habit to allow voluntary experiments full scope before the State decides on the best method of satisfying a new social need. But the success which has hitherto attended this practice may, after all, have been conditioned by the easier circumstances of an age of confident expansion. The fumbling attitude of successive Governments to the problems of the depressed areas and malnutrition is not a very reassuring sign. In the near future the community will be confronted with a crop of unprecedented difficulties arising out of " the silent revolution of the birth rate." One thing is certain : there must be adequate supplies of accurate social and economic information. Everyone will strongly share Sir H. Llywellyn Smith's hope that the interval before the next London Survey will be much shorter than forty years.

BRINLEY THOMAS

Book Reviews

Crises and Cycles. By WILHELM RÖPKE. London: W. Hodge and Co. 1936. xi + 224 pp. 10s. 6d.

The position developed by Professor Röpke in this vigorous and stimulating book is an interesting and individual one. In his general outlook he remains an uncompromising Liberal in what I must venture to call the Continental sense. He regards the troubles of the world as due largely to ill-judged interference with the free working of the capitalist—identified perhaps too easily with the *competitive*—system (" very rarely has a monopoly come to life in the absence of more or less violent engineering on the part of the State "): as a long run policy he demands a diminution not an increase in the part played by the State in economic life. In the field of cyclical fluctuation he remains faithful to the view that the fundamental trouble is " over-investment " during the boom, and that once this has been allowed to develop a period of recession and readjustment is inevitable and should not be resisted. But the experience of recent years has convinced him that after a point this salutary process may, if we do not take care, deteriorate " into a process of murderous and ferocious destruction," " devoid of every necessary function . . . and therefore without sense." Since Professor Röpke holds all his views with decision and expresses them with élan, his trouncing of the " cleaning-up " enthusiasts and economy campaigners (pp. 181–2) is no whit inferior in energy to those which have emanated from very different quarters. And against the " secondary depression " thus distinguished and condemned he is ready to use the weapons not merely of monetary policy but of Governmental borrowing to finance public works or even (from some points of view, preferably) deficits on current account. Such things may be described as " conformable intervention " and do not come under the condemnation of " Planning." But they should be conducted with as little fuss as possible. " The less we hear of ' reconstruction ' and ' new epochs,' the more we avoid creating the impression that we need a new money or credit system, a new State, a new philosophy and newer and better economics, the greater will be the prospects of success." In particular, devaluation is almost always naughty and unnecessary.

It is not denied that this policy involves two difficult problems of timing—when to start and when to stop. How are we to know just when the primary depression has become secondary ? " No cut-and-dried answer to this question seems possible, since a more or less broad period of a doubtful nature divides the two phases " : but the persistence of mass unemployment, and the engulfment of the *consumption* industries in depression, may be a guide. How are we to know when the "compensatory and balancing" phase of the upswing is passing into the "self-inflammatory and unbalancing" phase? This question I think Professor Röpke, in his eagerness to reassure his fellow-anti-interventionists that "expansion" does not mean "inflation," at times tends to over-simplify. He is emphatic that, since there are unused productive resources, effective expansion can be carried out without any perceptible rise in the price-level (this conclusion, incidentally, is used to give somewhat dubious support to his argument against the need for exchange depreciation; it is by no means clear that, just because a country's price-level does not rise, the generation of an increased stream of buying-power therein will not exert a pressure on its exchanges). But it is all, surely, a question of degree: in most countries, on most occasions, the level of activity adjudged on general grounds to be the best may well entail a price-level substantially higher than that touched in the depths of the slump; in this matter as in others we cannot as a rule hope to get the best of both worlds. Professor Röpke is on safer, though still—as he sees—sufficiently debatable ground when he makes the "sudden and excessive increase of investment activity" his criterion for a reversal of the engines.

This brings me to the theoretical heart of the book—the pages (97–119) in which Professor Röpke attempts to give precision to the concept of the "over-investment" which does the damage during the boom. His "over-investment" is not the same as that of Professor Hayek and of the Mr. Keynes of the *Treatise on Money*, i.e. it is not merely investment which in some sense outruns the spontaneous thriftiness available, feeding instead on the precarious fuel provided by credit expansion. It is true that in the actual capitalist world it *is* credit expansion which extracts the fuel: but whereas under capitalism the coercive machinery "is represented by the banking system with its cheques and overdrafts," in Russia it "is represented by the G.P.U. with its rifles and dungeons." Further even if the fuel were provided with unambiguous spontaneity, over-investment would be over-investment none the less: hence Professor Hayek's remedies are no remedies ("if the increase of investments has taken on pathological dimensions a further increase of capital can only postpone the turn, and this only at the expense of a later and all the more severe reaction"), and his "over-investment" only the commonest species of a larger genus.

What then is "over-investment" or "over-saving" in this extended sense? Fundamentally it is a product of the "principle of acceleration"—of the fact that, when capacity is reached, an increase of x per cent. in the demand for a finished good or service will involve an increase of more than x per cent. in the demand for new instruments of production, while any slackening of the rate of increase of the former demand will entail an absolute fall of the latter below its enhanced level. Hence, failing an infinite and inconceivable mobility of resources between different branches of production, there occur periods of indigestion in which investment (however financed) turns out to have outrun the adaptive powers of the economic system. Such a phenomenon is quite consistent with the absence of any *chronic* tendency either for investment to exceed what is socially desirable, or for the system to run down through a leakage of thrift (pp. 105, 131). Indeed to some extent "over-investment" thus conceived is an inevitable feature of economic progress: and it is ultimately a question of political judgment (pp. 138–9) how much of it we want to have, i.e. what is *over*-over-investment and what is not.

The present reviewer, to whom (if he has interpreted them correctly) these somewhat intricate ideas are particularly sympathetic, is inclined to wish that Professor Röpke had devoted more of his 220 pages to their elucidation, to the exclusion of a certain amount of general polemics which he finds less interesting and persuasive! But the book as it stands is not only a compact and useful survey of a wide field, but a sincere and courageous contribution to constructive thought.

D. H. Robertson.

An Historical Geography of England Before 1800. Edited by H. C. Darby. Cambridge University Press. 1936. xii + 566 pp. 25s.

An Historical Geography of England consists of fourteen studies, edited by Mr. H. C. Darby. The first four chapters are concerned with pre-Conquest England, and deal respectively with pre-historic Britain, the Human Geography of Roman Britain, and the Anglo-Saxon and Scandinavian Settlements. The second four, of which two are devoted to English foreign trade, cover roughly the five hundred years from 1000 to 1500. Chapters IX and X give a picture of Tudor England as it might be seen by one travelling in the footsteps of Leland and Camden. The seventeenth and eighteenth centuries are each given one chapter, while, in addition, two topics of importance in both—the draining of the fens 1600–1800, and the growth of London in the same period—are the subject of separate essays. There is an admirable series of maps and diagrams. The references to the sources used are usually, though not quite always, adequate. Each chapter is followed by brief, but useful, bibliographical notes.

Such a book, by authors of the distinction of the contributors to the present volume, is, it need hardly be said, of the greatest interest. As the editor points out, it is not planned throughout of the same pattern, and the reader must remember, in turning from one part of it to another, that, though much of the subject matter is the same, it is handled by the different authors in a quite different manner.

Several of the chapters, like—to mention only a few examples—the admirable account of Roman Britain by Mr. Gilbert, the chapters on mediæval trade by Mr. Williams and Mr. Pelham, and Mr. Darby's account of the draining of the fens, are closely packed syntheses of the results of research on some particular problem or problems. Others, as is inevitable when evidence piles up, cover too wide a field to work all parts of it intensively. The mere mass of material imposes on one writing of the seventeenth and eighteenth centuries a remorseless self-restraint, and the chapters concerned with them are masterpieces of compression. Others, again, no doubt designedly, are discursive, and leave the hares which they raise to be run down by the reader. Such diversities of treatment were, no doubt, unavoidable, and are not without their advantages. Evidently, there are as many ways of writing geography as there are of writing history.

A reviewer who has no pretensions to geographical knowledge is likely to labour truisms. If he is interested, however, in economic history, he cannot fail to be impressed by the importance of the geographer's contribution to the understanding of it. Economic historians have not always resisted the temptation to lay more emphasis on change than on the relatively stable framework within which change takes place. With few exceptions, they have told us more of the modifications which the organism has undergone in different phases of its growth than of the manner in which it functioned in any one of them. The geographical approach has also, perhaps, its limitations ; for all the admirable qualities of the present work, the dynamics of economic development are not its strongest point. What it offers is an account of large and relatively constant forces, from which historians are apt to turn aside, because they take them for granted, but which they ignore at their peril.

In the case of agrarian history, the neglect of the environmental factor has been peculiarly disastrous. For one thing, the whole group of issues which are connected with the progress from a more extensive to a more intensive agriculture is unintelligible except in the light of a consideration of the relations between land and population more searching than has usually been given them. England, with a population sparse compared with that of the Netherlands or parts of Northern Italy, and a quarter or more of her area still waste at the end of the seventeenth century, had some of the characteristics of a colonial society. Her agricultural technique and certain features of her social life, such as the scarcity of wage-labour, were, like the same features later in America, partly the result of them. For another thing, in studying agrarian history, regional differences are obviously fundamental. Varieties of soil, climate and land configuration affected not only agricultural methods, but forms of social structure ; it would probably be found, for example, that in the past, as to-day, peasant farmers, even in those parts of the country where they were numerous, were not evenly distributed, but tended to be concentrated in pockets where local conditions favoured them. The remarkable degree of specialisation, again, in the industrial characteristics of different provinces, which was a feature of English life long before it moved Defoe to one of his rhapsodies, is hardly to be explained except by a more thorough study of communications than is to be found in most works on economic history. Traditional accounts appear usually to be coloured by the remarks of Arthur Young, who saw them, as he saw the open-field village, in the day of their ruin, and who, if a shrewd observer, was less successful as an interpreter. In that matter, as in some others, the Arthurian legend requires revision.

Whether such suggestions are valid or not, the subjects for light on which the historian must turn to the geographer are obviously numerous and important. He is fortunate in having at his disposal a work so well-informed and so humane as the present volume.

R. H. TAWNEY.

Food, Health and Income. By J. B. ORR. London: Macmillan. 1936. 72 pp. 2s. 6d.

Studies of Family Living in the United States and Other Countries: An Analysis of Material and Method. By FAITH M. WILLIAMS and C. C. ZIMMERMAN. U.S. Dept. of Agriculture, Misc. Publications, No. 223. 1935. 617 pp. 60 cents.

In reviewing Sir John Orr's small book, some months after its publication and notice in the general Press, it is scarcely necessary to do more than recommend those who have not yet read the study to rectify the omission at once. The diet offered can be taken by all with salutary results.

It is not impossible to criticise the detail of certain statistical calculations in Sir John's development (e.g. on the distribution of the population according to income) or to object to the way in which some of the diagrams are drawn. But such criticisms cannot invalidate the general conclusions reached in the matter of the consumption of food at different income levels. It is maintained that a substantial proportion of the population necessarily adopts a diet deficient, from the health standpoint, in most constituents. A correction of this would need a 10—25 per cent. increase in individual consumption of such items as milk, butter and vegetables. In view of the present potentialities of food production, we have indeed "an entirely new situation which demands economic statesmanship."

The main object of the recent publication of the U.S. Department of Agriculture is the presentation of an exhaustive bibliography of published studies on family living. The studies listed, numbering nearly 1,500, relate to all parts of the world and to all periods between the seventeenth century and the beginning of 1934. The criteria for the inclusion of a study were, firstly, that it should give data for individual families, and, secondly, that it should specify the money incomes or expenditures of the families for some period of time. In the vast majority of cases, notes are added to the reference indicating the main objects, methods and results of the study. A few references outside the U.S.A. are given without notes when the study concerned has not been available for examination. The notes are supplemented by some separate and very valuable key tables setting out, for each work, the material presented and the methods adopted in collecting and analysing the data.

The reviewer of a bibliography of this kind is tempted, very naturally, to sample those sections with which he is familiar and to expose omissions in the list and inaccurate or misleading statements in the notes. An application of this method shows that the present bibliography is not exempt from such criticisms. But the general conclusion does appear that the work has been extraordinarily comprehensive and accurate. The net, of fine mesh, has been widely cast and carefully drawn in. One of the editors goes so far as to regret that the household account books kept by the Romans have not been preserved for our critical examination.

The introductory text to the volume includes some interesting historical notes and a short, but invaluable, account of the two general methods used, the Le Play " intensive " method of studying a representative family and the statistical " extensive " method of taking groups of families. Particularly important are the remarks on the various " equivalence scales " adopted for the comparison of families of varying age and sex composition, and on the use of the " poverty line " devised by English and other investigators.

R. G. D. Allen.

Catholicism, Protestantism and Capitalism. By Amintore Fanfani. London, 1935. Sheed and Ward. 224 pp. 6s.

An English translation of Mr. Fanfani's Italian essay of eighteen months ago is very welcome, as it contains a well-balanced and serene contribution to the debate on the connection between religious doctrines and capitalist origins.

Mr. Fanfani is critical of Weber's " Protestantische Ethik." Nevertheless he has many points of contact. For instance, he is also anxious to establish, in this field, how far ideas have been effective forces in history; he stresses the importance of the " spirit of capitalism," and he employs the concept of the " ideal type." Yet he cannot accept Weber's reasoning. He is sceptical of the alleged novelty of much of the Protestant attitude to economic life—a scepticism which results from his own wide knowledge of Catholic doctrine. He cannot accept the explanation of the well-known fact of the existence of capitalism before the Reformation which consists of regarding it as a blind form of capitalism working without the capitalist spirit. He regards the force of competition as one of the main sources of the spread of the capitalist spirit—capitalist action exerting such a strong compulsion to follow suit in order to remain on competitive terms that the abandonment of obstacles to the creation of a capitalist mentality became almost inevitable. So we come to a passage which quite clearly puts the problem in all its simplicity, and at the same time in all its complexity (pp. 178–9): "To reason in terms of utility means a tangible result; to reason in terms of Paradise means hope of a result of which the certainty vanishes if faith weakens. . . . . It is the waning of faith that explains the establishment of a capitalistic spirit in a Catholic world, but in a certain sense it is the establishment of the capitalistic spirit that brings about a waning of faith." This does not merely give a clue to the self-development of capitalist rationality; it also gives some hope of a more accurate appraisal of the religious influences on the process of development.

Mr. Fanfani distinguishes clearly between the effects of the Reformation and the consequences of Protestant doctrine. But he does not always maintain a rigorous enough distinction. Of Catholicism he truly says it "has opposed the establishment of capitalism, even if in certain ways it has favoured its progress in this or that direction." But when he enquires whether capitalism was encouraged or opposed by Protestantism he admits consideration of the incidental by-product:—"such encouragement or opposition could result either *from events to which the Protestant movement gave rise*, or from doctrines implicit in Protestant ideology" (Reviewer's italics). Why should this dual approach be appropriate in the case of Protestantism but not in that of Catholicism? One unfortunate effect seems to be a misapprehension of the consequences of the doctrine of Predestination.

Mr. Fanfani indicates clearly the liberal implications of a developed and well-informed capitalism; although, in this again perhaps approaching Weber, he throws out the interesting suggestion that communism, applying the rationalisation of economic life to man himself, is the apotheosis of capitalism. He does not minimise the social improvements due directly to "an even better understanding of what is profitable" under capitalism. In spite of this he seems to over-emphasise the aspect of capitalism as a mere disrupter of traditional restraints. While clear on the necessary connection between the development of capitalism and the development of individualism, he gives perhaps too much attention to mere strivings for petty monopolies. This is probably the true emphasis when considering its rise, but not the most helpful towards understanding later developments. Hardly enough attention, again, seems to be paid to technique. In general, however, though one may criticise

Mr. Fanfani's view of the relative importance of the various aspects of the problem, it would be difficult to convict him of neglect of any material ones. This is a book which, even though it may not be acceptable to every school of thought, must at any rate be respectfully considered by all.

H. M. Robertson.

The Problem of Investment. By F. I. Shaffner. John Wiley and Sons, New York. Chapman and Hall, London. 1936. vii + 357 pp. 15s.

The institutions of capitalist enterprise which have developed least satisfactorily are those dealing with investment. The fact that they have attained a high degree of technical efficiency has simply meant that the earlier sporadic outbursts of human stupidity and greed in this field have been converted into a continuous round of erratic speculation which drags the whole economic system after it, whilst chicanery has been elevated from the petty to the wholesale level. The co-ordination of the theories of money and credit now being achieved by economists is giving us for the first time a clear picture of the dynamic process and bringing into sharper relief the rôle of our monetary and capital institutions in relation to the factor of uncertainty and anticipations. The test and the only test of these institutions is how they function in this respect. Dr. Shaffner's book is based largely on the experience of the last American boom and its depressing aftermath, and if we are to judge by this gaudy episode the answer to the question is a sour laugh. Dr. Shaffner, however, is not concerned with this larger issue, but merely with instructing the potential investor about the latest refinements in the shearing process. His conclusion and advice that there is no such thing as a riskless investment are banal enough and likely to prove no more salutary than the bland verdict of an Eastern potentate on the Derby, namely, that he always knew that out of twenty horses one was likely to run faster than all the others.

Dr. Shaffner gives us a convenient summary of material that has been made familiar by the researches of Berle and Means and other writers and by Congressional investigations. If he can induce the Lord Peter Wimsey enthusiasts who are on the bucket-shop lists to devote a little attention to the real detective work of Mr. Ferdinand Pecora he will have performed a useful service. He opens with an account of the growth in the size of the corporation and in the number of investors, and then describes the various devices for separating ownership from control, preliminary to separating the owner from his capital. There is a short chapter on the unsavoury episode of the commercial banks and their security affiliates, and one on the sorry fate of foreign investments. A special section is devoted to the bilking of the mortgage holder, and here Dr. Shaffner touches on some profounder issues. There is an increasing tendency, for example, to abrogate the law of contract on the grounds of so-called public interest. The rule that the continued operation of the property is paramount in the interests of public safety and comfort is expanding into the general doctrine that the collapse and disappearance of any large concern " would create a larger vacuum than the economic fabric could safely withstand." The people who trade on the equity are not slow to trade on this, and the bondholder, who after all is usually a small fry mainly concerned with an old age he may never attain, becomes the sacrificial goat in every reconstruction.

The modern corporation has developed into a device for siphoning off the profits of huge aggregations of capital into a few pockets, and the reviewer used to regard it as the sole merit of the trade cycle that its incalculable movements resulted in an occasional reversal of the siphoning. But judging by the American experience there is as much loot to be garnered during a depression as in the boom and frequently by the same people. Professor Robbins' dictum that the big frauds almost all have been perpetrated on a rising market is of doubtful application nowadays, although he would doubtless reply that if they are not the accompaniment they are merely the aftermath.

The late Lincoln Steffens after a lifetime's research into municipal corruption came to the melancholy conclusion that it probably paid the community to let the grafters run the show, and perhaps this applies to enterprise in general.

G. L. SCHWARTZ.

Economics and Sociology: A Plea for Co-operation in the Social Sciences. By ADOLF LÖWE. Allen & Unwin. 1935. 5s. net. 156 pp.

Dr. Löwe's thesis, in this stimulating set of lectures, is the straightforward one plainly indicated by his title: an excessive division of labour in the social sciences, he argues, is injuring their development and practical application to an extent for which even the greatest of the achievements in any one of them is no compensation at all; and the obvious remedy lies in that intelligent co-operation between specialists which is the next best thing to all being generalists. The major interest in Dr. Löwe's book for economists lies not so much in his recommendations, with which few would quarrel except in detail, as in the arguments by which they are reached.

In these arguments there is much to quarrel with, possibly for the sociologist, but certainly for the pure economic theorist, in whose claim to set forth generalizations of universal validity Dr. Löwe discovers ' something . . . but certainly far less than many economists contend.' Few economic theorists, at least of one of the five schools that Dr. Löwe distinguishes, will object to the statement that ' pure theory only tries to handle a *given* body of ends and means in a particular . . . " economic " way of co-ordination ' and thereby leaves unexplained ' the tastes of the individuals, the origin of the means and also their distribution among the individuals.' But the next step in Dr. Löwe's argument, which suggests that the inevitably mathematical content of pure economics is of the nature of original sin, admitting of regeneration only through renascence into applied or semi-applied economics through union with sociological data, will by no means command assent, even from those who are sufficiently good disciples of Richard Jones to believe in the possibilities of something like this as an *alternative* development to that of pure economics.

All economists should read this book, and all sociologists ; especially all sociologists.

EDWARD BATSON.

The British Railways. By ALEXANDER NEWLANDS. Longmans Green. 1936. 7s. 6d. 135 pp.

It is the second part of this essay which provides the justification for its publication. Mr. Newlands was, until 1933, the chief engineer of the London, Midland and Scottish Railway Company, having held the same office on the Highland line, and he here calculates a number of illuminating cost figures from the official railway statistics for 1933.

On the basis of these statistics, he estimates that only one-fifteenth part of the total weight of trains consists of revenue-earning load, and he stresses the urgent need for improved rolling stock designed to reduce (especially in passenger trains) the proportion of non-paying weight. The total annual expenditure of the British railways is attributed almost equally to passenger (£61 mn.) and freight (£62 mn.) traffic ; the gross passenger receipts (£67.4 mn.) thus yield net receipts equal to only 9.6 per cent. of their value as compared with 23 per cent. accruing from the gross freight receipts (£80.8 mn). It is doubtful whether the business of carrying passengers (as distinct from parcels, mails and parcel post) yields any net revenue at all.

Mr. Newlands proceeds to calculate the average cost of running passenger and freight trains per gross ton-mile. For 1933 he deduces for passenger traffic an average cost figure (covering maintenance and renewals of way and works and rolling stock, locomotive running expenses, traffic expenses and general charges) of .189 pence per gross ton-mile of complete trains with engine. A train of 12 corridor-coaches (460 tons gross) would thus cover its costs on a 400-mile journey with 9 1st class and 74 3rd class passengers. For goods trains the average cost figure of .35 pence is calculated per trailing ton-mile (*i.e.*, excluding engine weight). In view of what the figures cover, Mr. Newlands misleads the reader when he names them " prime costs ".

The sketch of transport history which occupies the first part of the book is of value mainly as revealing the interests of a railway engineer in this field. Ninety years ago each railway passenger travelled on the average 17½ miles: in 1933 the " average journey " was 18 miles. Then, " had there been no competition amongst the rival railway companies themselves and no Government regulation of their activities as a whole, it is possible the monopoly they eventually enjoyed might have been oppressively exercised ". To-day, " it is to themselves that the railways must look for a way out of their difficulties: Governments have never been their staunchest friends ".

A. Plant.

British Banks and the London Money Market. By R. J. Truptil. London: Jonathan Cape. 1936. 352 pp. 10s. 6d.

This is the eagerly awaited English edition of Mr. Truptil's *Le Système Bancaire Anglais et la Place de Londres*, which was reviewed in Economica in November last year. In the present edition the tables and charts, which in the French edition mostly ended in 1932, have been extended to the end of 1934 and in some cases to the middle of 1935. The discussion has also been brought up to the end of 1934, and provides a very useful brief history of the banking and monetary aspects of the depression and recovery in this country.

Among other improvements on the earlier edition are expanded notes on the most important of the London Acceptance Houses, and a fuller description of the Paris money market, introduced for purposes of comparison. There is also a new final chapter on the future of the City, in which Mr. Truptil deals with the problems which will arise when the pound is ultimately stabilised and the gold holdings of the Bank of England are revalued, and also discusses the Socialist party's programme for the nationalisation of the banks.

This book may be strongly recommended to students of British banking and financial organisation, and particularly to those who wish to obtain a clear and coherent study of the very important new developments which have taken place during the past few years.

F. W. Paish.

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